INTERNATIONAL ABSTRACT OF SURGERY

OCTOBER, 1919

ABSTRACTS OF CURRENT LITERATURE

GENERAL SURGERY—SURGICAL TECHNIQUE

OPERATIVE SURGERY AND TECHNIQUE

Kennedy, J. W.: Standardization of Surgery. *Am. J. Obst.*, 1919, lxxix, 759.

In the last 1,000 re-operations in abdominal surgery at the Joseph Price Hospital much that is reprehensible was discovered. In over 99 per cent of the cases there were adhesions to the scar or to the abdominal wall in the region of the scar. Adhesions in the region of the scar rather than to the scar itself, if not the result of stitch infection, must be due to the inclusion of some of the viscera by the terraced method of suture. Adhesions even more remote from the scar must be due, in large measure, to the traumatic use of the retractors.

In practically all of these outside cases the operations were performed by men who use gloves, catgut, the terraced method of suturing, and abdominal retractors. Not over 7 per cent of the author's patients who return for re-operation have had any adhesions to the scar or in the region of the scar. Gloves, catgut, the terraced method of suturing, and retractors are not used. The 1,000 re-operations in abdominal surgery included also the usual number of other procedures. The group of cases which showed the greatest percentage of operative failures and returned for re-operation were those in which plastic surgery had been performed. Over 85 per cent of the patients who had perineal and cervical repairs had had previous repairs which were failures. The terraced method of suturing with catgut had been done in nearly all cases by practically all the more recent methods. The author never uses catgut in surgery and never repairs the perineum by any of the more modern methods of terraced suturing.

The percentage of permanent successes should be larger in repair work than in any other branch of surgery. The catgut suture and terraced method of suturing by the overcurved needle which includes insufficient tissue are responsible for practically all the failures. The straight needle, which includes nearly 100 per cent of the tissues when inserted at right angles to the surface, is the secret of success, and when threaded with silkworm gut gives no chance for failure. That plastic surgery is a lost art is indicated by the great number of operations which have been devised and their failure. Emmet and Haeger remain supreme. The only failures which are possible in the procedures recommended arise from misunderstanding or inability to perform the operations.

Another large group of patients returned for re-operation because of incomplete surgical procedure for the removal of tubal and ovarian infections. In all of these the operation could and should have been completed in the first instance. Cases in which there is vaginal puncture constitute some of the most difficult of surgery. The author knows of no legitimate place in surgery for vaginal puncture. In the re-operations following gastro-enterostomy during the last two years he has undone more gastro-enterostomies than he has done.

Kennedy finds himself less able to cope with those cases in which there are symptoms following the removal of the gall-bladder. These are improved little, if any, by re-operation.

In the author's opinion too many gall-bladders are removed. When surgeons learn the superior use of gauze as a pack in draining the gall-bladder they will remove gall-bladders less frequently and will learn also that after this more thorough method of drainage the gall-bladder will often function.

The large group of patients who come for re-operation following ventral fixation or suspension often have the most severe pathologic conditions of which the author has knowledge.

In an attempt to standardize the procedures for which multiple operations are being done—such as twenty or more methods of shortening the round ligaments and thirty or more operations for repair of the perineum—their multiplicity may be condemned for two reasons, i. e., the operation is either not indicated at all or is based upon a doubtful surgical foundation. EDWARD L. CORENLL.

Le Maitre, F.: The Conception of Regional Surgery as Filling in the Gap Between General and Special Surgery. (Conception d'une chirurgie régionale destinée à prendre place entre la chirurgie générale et la chirurgie speciale). *Rev. maxillo-faciale*, 1919, iii, 305.

Between the surgery of the specialties, which is too limited to deal with all lesions, and general surgery, which is too broad to deal with the refinements of the special branches, there is a field which should be recognized as that of regional surgery. This regional surgery is related to special surgery in that it recognizes its particular methods and its special technique. On the other hand it adopts the broader principles of general surgery and applies them not to one or two organs alone but to the entire region.

There are many points in which general surgical principles must be modified when applied to the head and neck. Le Maitre, however, desires to refer only to three fundamental principles which are based on the special anatomy of the face: (1) illumination; (2) the use of the natural passages as avenues of surgical attack as well as for drainage; and (3) the question of local anæsthesia.

A regional head surgeon should be well trained in the use of the electric head mirror.

There are certain deep-seated localities such as the pterygomaxillary fossa, zygomatic region, etc., which can be approached by the natural passages. A surgeon who uses the cutaneous route when he should make use of a natural passage is not a true head surgeon.

There are special methods of inducing regional anæsthesia such as that of laryngotomy between the cricoid and thyroid cartilages. This method also has indications in facial surgery. However, while it is easy and safe, it should be reserved for only the most serious cases. W. A. BRENNAN.

Farr, R. E.: The Transrectus Incision in the Upper Abdomen. *Minnesota Med.*, 1919, ii, 176.

The proper performance of an intra-abdominal operation demands an incision through the abdominal wall of sufficient length to allow the surgeon to do his work insofar as possible unhampered by the interference of the abdominal parietes. During recent years long incisions have been made with less hesitancy and with a corresponding improvement in surgical therapy. Nevertheless, every effort should be made to conserve the abdominal parietes to an extent commensurate with the handling of the intra-abdominal problem.

Regarding the direction of incisions, structures to be conserved, etc., certain usages have become established. The points for consideration are: (1) the appearance of the resultant scar; (2) the relative importance of the division of muscular as compared with aponeurotic tissue; (3) conservation of the blood-supply; (4) conservation of the nerve supply; (5) anticipated pathology; (6) the facility with which the incision may be made and closed; and (7) the relaxation afforded during operation and after operation.

While the appearance of an abdominal scar is relatively unimportant, it does make a difference and it is desirable that an incision be placed so that the scar will be as sightly as possible. The most sightly scars are those of incisions along Langer's lines.

Two main objections are made to the division of the rectus muscle: (1) it is said that it retracts between the anterior and posterior sheaths and cannot be re-united unless some method is used to prevent this retraction, and (2) the hæmorrhage is troublesome and is somewhat hard to control as it comes directly from the cut surfaces of the muscle. Many surgeons suture the rectus muscle to its sheath for the purpose of preventing retraction, but the author believes this is unnecessary though for the purpose of hæmostasis it may be desirable. He has found that when the incision strikes a linea transversa there is no retraction. If the incision goes through the red muscle, however, there is some retraction, the degree depending upon its distance from a linea transversa. A proper closure of the sheaths of the rectus (aponeurosis) has always resulted in an intimate contact of the divided ends of the muscle.

In the presence of a sufficiently free anastomosis, the division of the blood-vessels is relatively unimportant. Even with division of the main blood-supply, incisions through extremely vascular areas heal with great rapidity.

Unless made with extreme care the pararectal incision must destroy one or more of the nerves which are regarded by many authorities as the most important structures in the abdominal wall. Atrophy then unquestionably results. Quain shows that visceroparietal adhesions are more prone to develop when the nerves of the abdominal wall have been divided.

Above the navel the transverse incision offers the most adequate exposure of the various pathologic conditions, and by supplementing this incision with the near-midline vertical incision when necessary, one is afforded perhaps the most ideal exposure it is possible to obtain. In the matter of choosing incisions a great deal can be done by varying the size and direction according to the pathology anticipated.

All authorities agree that it requires more time to enter the abdomen by the transverse route. In closing, however, the relaxation afforded by the proper posture of the patient makes it possible to unite the edges of the transverse cut in a relatively short time. When the vertical cut is added, the strong lateral pull is at once encountered and the problem becomes more difficult. The transverse incision always comes together more easily than the vertical.

Greater accessibility may be obtained through the transverse incision than through a vertical incision of equal length, and there is less postopera-

tive discomfort. This is probably due to two factors: (1) the better exposure afforded by the transverse incision which allows the surgeon to do his work with less trauma; and (2) the fact that the line of incision may be relieved of tension to some extent by having the patient assume a proper posture.

Generally speaking, the gall-bladder is exposed by a division of the right rectus muscle above the navel. The stomach is exposed by a division of the left rectus. With either of these incisions we go across the linea alba. If the disease lies high, the incision may be supplemented by a vertical limb which may be extended to the ensiform if need be. In making the latter, the linea alba is avoided as a matter of preference the anterior sheath of the rectus being divided first and then the posterior sheath from ½ to 1 inch from the linea alba.

P. H. KREUSCHER.

Arce, J.: The Star Incision in Operations on the Upper Abdomen (La incision estrellada en las intervenciones del abdomen superior). *An. d. Inst. mod. de clin. med.*, Buenos Aires, 1918, iii, 221.

The McBurney incision has an unquestionable advantage in the fact that after the skin and cellular tissues are incised the muscle planes are traversed by separation of their fibers rather than cutting.

In operations on the upper abdomen the author uses an incision similar to the McBurney incision which he calls a "star" laparotomy. The technique of this operation is as follows:

1. A transverse skin incision is made from a point the width of two fingers outside the median line to the axillary line, a little beneath the costal border, and running approximately 2 inches above the umbilicus.

2. When the skin and cellular tissues are incised, the fibers of the obliquus major are separated as widely as the wound will allow and down to the external edge of the abdominal rectus. The fibers of the obliquus minor seen through the lower border of the aperture of the obliquus major are also separated in all their visible extent until the external border of the rectus is reached where the separation of the obliquus major terminates.

3. The anterior part of the rectus is sectioned transversely and the rectus muscle pulled back with a Faraboeuf separator.

4. The transverse muscle and the posterior part of the rectus, together with the peritoneum, are then sectioned.

According to Arce this technique with the free use of retractors permits the surgeon to see the duodenum, the hepatic angle of the colon, the kidney, gall-bladder, and bile ducts. It also allows operation upon these organs as well as those for cysts and abscesses of the upper and lower surfaces of the liver.

To close the wound, the posterior part of the sheath of the abdominal rectus and peritoneum are sutured in one plane of the transverse muscle. This suture is simple when compared with that of the deep planes in vertical incisions. The rectus muscle is replaced in its position and the obliquus minor sutured as far as the external edge of the sheath of the rectus. The anterior part of the rectus is then closed, the suture being continued into the obliquus major.

The author has performed 24 laparotomies with this technique and has been fully satisfied with the results.

W. A. BRENNAN.

Sistrunk, W. E.: Practical Considerations with Regard to Permanent Colostomies. *Surg., Gynec. & Obst.*, 1919, xxviii, 436.

Nearly every type of colostomy that has been suggested and seemed practical has been used in the Mayo Clinic but up to the present time operations or procedures undertaken with the idea of giving the patient control of the bowel have almost always proved disappointing.

Many of the colostomies were entirely satisfactory; in a few there was a tendency toward the development of a ventral hernia about the colostomy. More frequently, however, the tendency has been toward retraction of the loop of bowel in which the colostomy was made, which in some instances allowed the proximal end to discharge a part of its contents into the distal end. Also when the bowel was cut off at or near the level of the skin, the skin tended to contract around the opening of the bowel and thus interfere with the discharge of fæces.

The author describes the colostomy he is now making, which is similar to the operation described by Mixter. The incision is a low left rectus incision of sufficient size for abdominal exploration. The colostomy is made in a loop of the sigmoid flexure, this portion of the bowel being chosen because of its mobility and length of mesentery. After the loop has been lifted out of the abdominal cavity, an incision 1½ to 2 inches in length is made through its mesentery parallel with the vessels and extending upward nearly to the bowel. A second incision, about 1 inch long, is then made across the end of the first incision near the mesenteric attachment of the bowel, forming a good sized opening in the mesentery through which the two sides of the abdominal wall near the center of the incision are sutured beneath the loop. The remaining portions of the wound are then closed.

To relieve gas distention, a small opening may be made in the bowel if necessary any time after twenty-four to forty-eight hours, and in from five to six days the bowel is cut completely across with the cautery. After the loop has been cut across it will be found that the two ends of the bowel are separated by the entire abdominal wall for a distance of from 1 to 1½ inches, and the cut ends of the bowel protrude an inch or more above the skin.

The operation described has obviated some of the difficulties which have often followed other types of colostomies.

V. C. HUNT.

Gross, G.: Primary Suture of War Wounds. *Surg., Gynec. & Obst.*, 1919, xxviii, 603.

Early in the war expectant treatment of wounds was the rule. This gave way later to the use of large open incisions with adequate drainage, and from the disadvantages of this grew the practice of complete excision with primary closure.

In deciding upon primary suture three points were considered: (1) the length of time since the receipt of the injury, (2) the anatomical possibility of completely excising the wound, and (3) the favorable or unfavorable general aspect of the wound as regards primary re-union. When primary closure was not advisable careful antiseptic management controlled bacteriologically for from fifteen to twenty days was followed by secondary suture.

War wounds may be infected by purulent organisms alone, such as the staphylococcus or the streptococcus, or both, or by saprophytic anaerobes which thrive in the presence of bruised or bloodless tissue and whose activity depends largely on the types of aerobic organisms associated with them.

In order to arrive at a prognosis and determine the operative course, the nature of the infection must be established. In general, primary suture should be tried as a matter of course if complete debridement has been done. If the staphylococcus is present in the primary discharge local drainage should be instituted when necessary. If the streptococcus develops, the wound should be opened widely. If anaerobes appear (usually not before thirty hours), all recesses should be freely exposed.

When primary suture has not been done, the surgeon should effect a secondary closure as soon as possible, being guided only by the nature of the aerobic organisms. The streptococcus alone contra-indicates primary suture.

The following points should be observed in order to understand the technique of primary suture:

1. The progress of sutured wounds. A large percentage of sutured wounds heal by primary intention. The stitches are removed after ten days and the patients evacuated as cured on the fifteenth or twentieth day. There is a reasonable absence of pain and general reaction in this group of wounds when primarily closed, even when they are very extensive in size. In a certain group of cases, however, there is slight fever, a slight redness and tension about the stitches, and often a few drops of pus. This condition subsides and healing is delayed only a little. In a small group (5 per cent of cases) the temperature rises 2 or 3 degrees for several days, the entire wound is swollen and painful, and when a small opening is made with the forceps between the stitches a little bloody fluid containing a few gas bubbles escapes. Further progress is uneventful. In still other cases the entire vicinity of the wound is swollen and tense, and a cherry-red color extends upward and downward. Often with evidence of gas beneath the suture an unpleasant odor is detected. This angry condition subsides as a rule without producing general symptoms providing the streptococcus is not present. Sometimes there is a little suppuration and the formation of a gas abscess which must be opened. When a streptococcus infection is present, however, the picture is quite different. The expression is drawn, the temperature high, the pulse rapid, the pain severe, and the region of the wound a deep red in color and mottled. These wounds must be opened at once as widely as possible. All such cases should be isolated.

2. How to determine the presence of the streptococcus. Primary suture is done under bacteriological control. Smears are taken by pipettes from all recesses of the wound between the tenth and eighteenth hour after injury. Inoculations are made in broth, on slanted agar with litmus and lactose, and into deep agar of Veillon. Egg albumen with soda or ascitic fluid when added to the broth facilitates the growth. Within four to six hours the streptococci may be identified. In very recent wounds only 10 to 15 per cent show the streptococcus alone, while in only 6 to 8 per cent are the anaerobes seen in association with it.

3. The technique to be followed to obtain constant results. First, excise the entire wounds of entrance and exit. Do not explore the track with the fingers or a probe. Practise wide excision, layer by layer, until all remaining tissues bleed, are contractile, and have a healthy color. In cases of fracture be satisfied with the removal of all free splinters which are not adherent and foreign bodies. If the projectile is embedded in a diaphysis or an epiphysis, the area should be hollowed out, laid flat, and touched with iodoform ether. It may then be filled in different ways. In cases of injured joints, primary resection, typical or atypical as needed (after the manner of Loubat) should be done. As antiseptics ether is best for the soft parts, and ombredanne and iodoform-ether for bone injuries. In closing the wound hæmostasis should be complete and the formation of spaces avoided.

4. The time for suturing. Primary suture should be done if no streptococcus is found and there is no anatomical or pathological contra-indication. Close practically every wound upon the patient's arrival, re-opening those in which the streptococcus has been found. Suture is contra-indicated in: (1) multiple wounds, when shock prevents extensive operation; (2) deep wounds which are infected and cannot be completely excised; (3) wounds containing large projectiles; (4) wounds producing extensive injury to the skin; and (5) wounds not requiring suture (enucleation of the eye).

The advantages of primary suture are unquestionable. The period of suffering is shortened. The danger of secondary infection is obviated. Functional restoration is obtained more quickly. A flexible, non-adherent scar is not likely to become malignant. Fewer attendants are necessary. The time of disability, even with extensive wounds, is much shortened.

The requisites for constant results are: a competent surgeon, a competent bacteriologist, and con-

trol of the wounded at least fifteen days to allow primary healing.

The work of Tossier, on which all wound closures are now based, permitted the greatest progress in surgery realized during the war. E. M. MILLER.

Le Fur, R.: Eighty-Two Cases of Primary Suture (Sur 82 cas de sutures primitives) **Ten Cases of Primary Suture of the Joints** (Dix cas de sutures primitives articulaires). *Paris chirurg.*, 1918, x, 400, 455.

In the 82 cases of primary suture of war wounds reported by Le Fur the indications for this procedure were given by the nature of the wound, its clinical aspect, its recent date, and the results of bacteriological examination.

Total suture was done in 14 cases; in 62 filiform drainage was necessary.

A successful result was obtained in 70 cases. The 14 total primary sutures all resulted successfully; of the 62 wounds which were drained the results were successful in 52.

Thirty-one of the wounds were bullet wounds and 51 shell wounds. The results of primary suture were successful in six-sevenths of the bullet wounds and four-fifths of the shell wounds. Twelve wounds were wounds of the head and neck, 30 of the upper limb, 29 of the lower limb, and the balance multiple wounds. The 12 face and neck cases gave 11 successes and 1 failure; in the 30 wounds of the upper limbs there were 28 successes and 2 failures; and in the 29 wounds of the lower limbs, 25 successes and 4 failures.

The wounds which were sutured within the first twenty-four hours after the injury gave 90 per cent successful results; those sutured within thirty hours, 88 per cent successful results, and those sutured within forty-eight hours, 85 per cent successful results. Suture after forty-eight hours gave 71 per cent successful results.

In the whole series of 82 wounds, many of which were very extensive and 13 of which were complicated by fracture, there was not a single fatality. In only 12 cases was re-opening necessary owing to infection. The author points out also the superiority of primary suture from the point of view of function. The cicatrices are soft and supple and there is no stiffness of the joints nor any complication in the muscles or tendons. In addition, recovery is far more rapid than following other methods of closure.

In his special report regarding primary articular sutures Le Fur treats of 3 elbow, 1 shoulder, and 6 knee-joint cases. Four were complicated by fractures. From the results in this series he draws the following conclusions:

1. In cases of joint wounds it is always more prudent and often necessary to open the articulation by a wide arthrotomy and to disinfect it thoroughly.

2. The disinfection and cleansing of the joint should be carefully done and complete. The arthrotomy should be large enough to expose the whole wound track, the synovia, the cartilage, and the bone regions, and to permit the removal of every particle of débris. The interior of the joint should be washed with ether.

3. Unless contra-indicated, the suture of the joint should be complete and a drain should not be used. The harm of drainage in joint wounds has been fully demonstrated. Drains favor infection and cause ankylosis. When drainage is necessary (as in purulent arthritis), however, the small Dakin drains should be used with continuous or interrupted irrigation with the Dakin fluid. These drains should be changed every day or every other day.

Le Fur believes that as a rule physiotherapy is delayed too long in articular injuries. In the cases in which he did a primary suture it was generally begun by the t elfth or thirteenth day.

W. A. BRENNAN.

Stoney, R. A.: Secondary Suture of Wounds. *Lancet*, 1919, cxcvi, 978.

The author outlines his method for secondary suture of wounds as follows: After thoroughly cleansing the wound with ether and iodine, the granulation tissue is removed with a sharp curet, the skin edges are separated by blunt dissection around the wound for a considerable distance, and this loose skin edge is removed. This having been done, the whole wound is thoroughly dried and the bleeding points securely tied. The wound is next swabbed with ether, packed for a few moments with gauze wrung out of ether, and then completely covered with a modified "bipp" composed of two parts of iodoform, one part of bismuth, twelve parts of vaseline, and enough hard paraffin to give the preparation the consistency of butter.

The tissues are sutured in layers with catgut, all dead space being obliterated, and finally the skin is united by thick silk impregnated with the paste described.

If there is no continued rise of temperature or pain after the operation the wound need not be dressed until the seventh or eight day. In the majority of cases, however, there is considerable tension, and dressing is done on the fourth day. The author has found it advisable to keep the edges approximated by strapping for a period of a week or ten days after the removal of sutures.

The article contains a tabulation of cases treated by this method. D. C. BALFOUR.

Butchel, F. C.: The Use of the Cautery. *Colorado Med.*, 1919, xvi, 144.

The uses of the hot iron in surgery are reviewed briefly. There are three groups of indications, malignancy, the prevention of infection, and the prevention of hæmorrhage.

In cases of malignancy the cautery has been found especially useful in the treatment of tumors of the jaws and uterine cervical, breast, and vesical carcinomata.

In the prevention of infection it is used for the destruction of gastric ulcers, the sterilization of appendiceal and cholecystectomy stumps, the sterilization of the cervical canal in supravaginal hysterectomy, gonorrhœal endocervicitis, and cervical ulceration, the treatment of noma, and, in the war zone, the treatment of recent wounds. Pancreatic fistulæ, corneal ulcers, and tonsillar infections have also been attacked successfully in this manner.

In the prevention and arrest of hæmorrhage the cautery has been employed in prostatectomy and the removal of nævi. K. L. VEHE.

Madero, G.: Some Psychic Cases Improved by Surgical Operation (Sobre algunos casos de psiosis mejorados con la intervención quirúrgica). *Rev. Asoc. méd. argent.*, 1919, xxx, 276.

Madero reports the cases of three women, inmates of a hospital for the insane, who showed distinct improvement after surgical operation. The first was a case of acute appendicitis and uterine lesions. The appendix was removed. The second patient had an abdominal tumor and was subjected to a cholecystectomy. In the third case the operation consisted in opening and draining an abscess in the region of the thigh. Following the operations there was a decided improvement in the patients' mental state as well as in their general condition. This mental improvement was observed shortly after operation when the disturbance due to the operative traumatism had subsided. The patients became tranquil, delirium ceased, and there was co-ordination of thought. The psychosis in these cases was the result of chronic infectious processes of slow evolution which had periods of acute exacerbation and had left a permanent effect on the mind.

True infectious delirium is manifested in the septicæmias, typhoid, etc. and is secondary to a general infection, disappearing with it. Other types of delirium may be more permanent and maintained as permanent psychoses after the acute infectious stage has passed until the organic disease disappears and the general health is restored.

W. A. BRENNAN.

Pringle, J. H., and Teacher, J. H.: The Digestion of the Œsophagus as a Cause of Postoperative Hæmatemesis. *Brit. J. Surg.*, 1919, vi, 523.

Postmortem digestion of the œsophagus is recognized as an extremely common condition but œsophageal digestion during life has been considered extremely rare.

The authors' first case was that of a well-built, well-nourished youth who died about ten hours after an appendicectomy. The abdomen showed no lethal pathology, but destruction of the lower part of the œsophagus, the presence of slate-colored fluid in the pleural sacs, congestion and hæmorrhage of the lungs in the neighborhood of the œsophagus, and interstitial emphysema were found.

Fifteen cases which came to autopsy and in which it seemed very probable that digestion of the œsophagus had occurred during life are reported.

The pathology in these cases varied from dilatation of the œsophagus just above the diaphragm by a thin black fluid associated with superficial ulcerations and hæmorrhages into the œsophageal wall, to deep and widespread ulceration with perforation and reaction in the adjacent pleura and lungs. In every instance there was a sharply defined ulceration of the mucous membrane at the very termination of the œsophagus, and when perforation had occurred, it was always found low down in the tube.

The hæmorrhages in this condition are of varying extent, submucous and intramural. Over these the membrane may be intact, or it may show superficial disintegration with widespread erosions or deep ulceration. The authors believe that the hæmatemesis is explained by the erosions over and around the hæmorrhages. The digestion of the devitalized coats they ascribe to the escape of the gastric juice into the œsophagus during the course of a toxic disease.

In cases of hæmatemesis there is often a state of profound toxæmia and the mortality is very high. The amount of blood vomited is usually small but in some instances is large. As a rule the fluid ejected is extremely acid and in many cases it has a scalding effect on the throat and lips. Often also there is a boring retrosternal pain. Usually the hæmatemesis begins soon after operation.

The authors conclude: (1) that digestion of the œsophagus may occur during life and cause hæmatemesis; (2) that this digestion may occur in the course of any disease which greatly lowers the vitality; and (3) that antemortem digestion of the œsophagus is one cause of postoperative hæmatemesis. K. L. VEHE.

ASEPTIC AND ANTISEPTIC SURGERY

Henderson, J. M.: The Carrel-Dakin Treatment in Empyema at Camp Custer, Michigan. *Northwest Med.*, 1919, xviii, 101.

The author summarizes his article as follows:

The Carrel-Dakin treatment of wounds may be successfully employed in empyema and is a most valuable method.

The best results were obtained in acute cases in which costectomy was performed and a limiting membrane had formed. In such cases an opening was made sufficiently large to allow the introduction of from four to eight Carrel tubes.

The average acute cases can be sterilized in from six to ten days and the wound successfully closed by sutures or allowed to close spontaneously.

From the beginning there is complete absence of odor, the pus disappears very rapidly, and the patient's general condition shows marked improvement.

The treatment of the delayed cases consisted of opening the pockets when possible or enlarging the sinus sufficiently to introduce the tubes, complete or partial sterilization of the cavity or old sinus with

Dakin's solution, and the introduction of Beck's paste.

The treatment of the cases of large pneumothorax consisted in sterilization of the cavities with Dakin's solution and the subsequent sealing of the wounds. The author believes that the first end to be attained is the sterilization of the cavity as he considers that there is more to be feared from the toxæmia than from the pneumothorax. It is impossible, however, to lay down any fixed rule that is applicable to all cases. Each must be considered a problem by itself and the treatment modified accordingly. E. C. ROBITSHEK.

ANÆSTHETICS

Vitrac: General Ether Anæsthesia by the Rectal Route (Anesthésie générale par l'éther administré par la voie rectale). *Bull. et mém. Soc. de chir. de Par.*, 1919, xiv, 934.

Vitrac's report is based upon the observation of 67 cases of general ether anæsthesia induced by the rectal route with ether-oil. The results obtained seemed to demonstrate that the injection of ether-oil has only a weak anæsthetic value. Sleep was perfect in only four-tenths of the cases, imperfect in five-tenths, and quite insufficient in the remainder. In the cases in which the anæsthesia had to be completed by inhalations, the quality of the narcosis was much better than when the anæsthesia was produced by inhalations alone. Only in favorable cases was the anæsthesia quite sufficient for all operations.

This form of narcosis is followed in a few hours or days by vomiting or abdominal pain. While these are not of great importance, the abdominal pain may continue for from one to twenty-four hours. In very rare instances pulmonary or hæmorrhagic complications develop.

Pulmonary complications in the form of pneumonia occurred in the cases of two men who were suffering from old pleurisy. In these instances the pneumonia was not serious and the author believes it may have been due to the operation rather than the narcosis. The most severe complication noted by Vitrac was hæmorrhage of the digestive tract which also occurred in two instances. One of these patients died.

Fifteen of the operations performed were on the thorax. Of these, 5 were for the extraction of foreign bodies and 10 were extensive thoracectomies. There were 10 excellent results, 2 cases of pneumonia, 1 case of excessive vomiting, 1 case of sharp pain, and 1 death. Four of the operations were performed on the head and neck. In 3, good results were obtained but in 1 there was pulmonary hæmorrhage. Two operations were upon the abdomen. The anæsthesia was perfect but the operation was interrupted by hæmatemesis. Two pelvic operations gave good results. In addition, there were 11 operations on the upper limbs and 22 on the lower limbs.

In the whole series of 67 cases there were 2 severe complications in cases in which it seemed there were the most definite indications for the operation.

In commenting on Vitrac's report Wiart pointed out that in 500 operations performed in the United States by this method there was only 1 death; in Russia where it was used extensively the statistics of 1,500 cases showed 6 deaths and 7 severe complications, but it is by no means certain that the majority of the deaths were due to the anæsthetic.

The complications may be divided into two classes: (1) those due to heart failure, and (2) those due to intestinal hæmorrhage. The first appear to follow the use of too much anæsthetic, especially in the cases of very susceptible patients. While Gwathmey and Sutton in the United States do not consider the objections raised against ether-oil anæsthesia of much account, they tacitly admit the dangers of an overdosage of ether since they tell how the quantity of the dose may be diminished.

The impression gained from the facts reported is decidedly unfavorable to the method. It is not superior to others and seems much more dangerous. No other method has given the proportion of 8 deaths and 8 cases of severe complications in less than 2,500 cases. Until these complications have been fully explained as due to negligence or some technical error which is avoidable, rectal anæsthesia as practiced now must be classed as unquestionably dangerous and its use should be discontinued.

W. A. BRENNAN.

Compañ, V.: Anæsthesia in Surgery of the Urinary Tract (La anesthesia en cirugia urinaria). *Rev. españ. de cirug.*, 1919, i, 222.

Compañ's paper was presented to the National Congress of Medicine, Madrid, April, 1919. His conclusions are:

1. Patients with urinary conditions are in a special class as regards physiological resistance and in surgical operations upon them the dangers of anæsthesia should be reduced to a minimum.

2. The number of cases in which general anæsthesia is used should be reduced to the lowest limits. Among the various general anæsthetics, ether is the best. The anæsthesia should be begun with a mixture of ether and chloroform. Ethyl chloride is preferred for short operations.

3. High epidural anæsthesia, although little employed up to the present time, merits attention as it easily and sufficiently anæsthetizes the pelvic organs so as to permit any kind of operation on the urinary tract. The Gil-Vernet method is the method of choice.

4. Local anæsthesia — either the method of Hackenbruch or the infiltration method of Reclus-Schleich-Braun—is the method of choice in urologic conditions. This has the least danger for the patient and is followed by an uneventful postoperative course whereas when other methods are used complications and even death may occur.

5. In operations upon the kidney and ureter the method of Schellheim-Kappis is of value in simple

cases; general anæsthesia is preferable in the majority.

6. Operations upon the urethra, prostate, and bladder should be performed as a rule with the aid of local anæsthesia induced by nerve blocking around the operative region or infiltration. In prostatectomy the author prefers Legueu's technique.

7. Novocaine with adrenalin is the anæsthetic of choice for local anæsthesia. W. A. BRENNAN.

Miller, J. A.: Secondary Suture and Skin Graft under Local Anæsthesia. *N. York M. J.*, 1919, cix, 770.

The chief advantages of early secondary sutures in the treatment of war wounds were, first, that the patient was made fit months sooner; second, that the dressings were done away with almost entirely for in absolutely successful cases only two dressings were necessary; and third, that the beds were ready for new patients in a shorter period. It therefore, preserved man power, reduced labor, and saved money.

Three of the author's chief reasons for doing secondary suturing of wounds under local anæsthesia were: (1) that while the wound was often ready for resuture, the patient, owing to gas poisoning, bronchitis, cardiac trouble, or poor general condition, was not able to take a general anæsthetic without risk to his impaired health; (2) that most of the men operated upon under local anæsthesia preferred it; and (3) that in the average base hospital there was a shortage of medical officers and local anæsthesia disposed of the necessity for an anæsthetist.

Excessively large and deep wounds could not be treated by this method, but these types of injuries were comparatively few among the cases coming under the author's care. When it was impossible to attempt secondary suture because of a great loss of skin, Miller resorted to skin grafting, using the same principles and performing the operation under local anæsthesia with excellent results.

Two days prior to the operation, the wound was dressed with gauze moistened with a 25 per cent solution of magnesium sulphate. At the time of the operation care was taken to wash all of the magnesium sulphate away from the wound with sterile saline solution before proceeding with the sterilization and anæsthetization of the part. Miller used chiefly 2 per cent novocaine or 2 per cent eucaine to which were added about 15 minims of adrenalin to the 4 ounces at the time of using. He infiltrated the entire circumference of the wound superficially and deeply and under the granulation tissue covering the wound. The needle penetrated from the surrounding edges which had already been anæsthetized.

In the cases of skin grafting, the entire area of skin was anæthetized intradermally instead of subcutaneously. E. C. ROBITSHEK.

SURGERY OF THE HEAD AND NECK

HEAD

Barnhill, J. F.: Surgery of the Trifacial Nerve. *Laryngoscope*, 1919, xxix, 342.

Since the gratitude of the patient is often modified by the amount of scar left by an operation, it is essential to adopt a method that will insure a minimum amount of deformity.

Failure to diagnose the seat of the lesion in neuralgia accurately accounts for failure to cure by surgical methods. Undoubtedly it is a fact that a portion of a nerve trunk may remain intact and its branches continue to be actively neuralgic after apparently extensive operations in which the resection has not been carried to a sufficient depth. The branches of adjacent trunks of the trifacial overlap like the terminal branches of the infra-orbital, nasal, and infratrochlear nerves, making diagnosis of the exact branch very difficult.

The author favors surgery of the ophthalmic branch and its divisions earlier than operation upon the two others because of the probability that injection methods will fail to cure or relieve and the facts that the operation causes almost no scar and this branch is comparatively easy to deal with.

As the continuance of an unbearable neuralgia of the ala of the nose and the upper lip in recurring cases indicates that the nasal nerve has not been extracted, the writer devised a procedure according to which an incision is made from the juncture of the outer and middle thirds of the supra-orbital margin well down on the bridge of the nose through the periosteum. The latter is detached cautiously toward the apex of the orbit until the anterior ethmoidal foramen is reached when the nerve is twisted out deeply enough to include the infratrochlear branch.

To effect a cure the infra-orbital nerve must be severed at the foramen rotundum. To accomplish this the author uses the transorbital route, chiseling away the osseous roof of the canal and avulsing the nerve at the round foramen, the orbital contents being held out of the way.

The transorbital operation has an advantage in that it does not open the antrum. A darkened room, good reflected light, and trained assistance are essential.

Experiments on the cadaver show that without chiseling into the canal and loosening the nerve the latter invariably snaps at the entrance owing to the large amount of connective tissue which binds it just within the foramen.

Return of neuralgia due to re-union after resection of 25 millimeters of the infra-orbital and infradental nerves has been reported and it is therefore believed

Fig. 1.

Fig. 1. The first step in the operation consists in the removal of the two wedge-shaped pieces from the floor of the nostrils to permit correction of the nasal deformity.

Fig. 2.

Fig. 2. First suture.

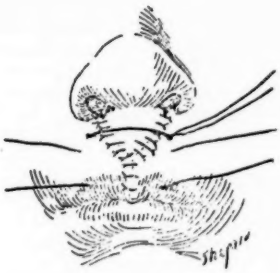

Fig. 3.

Fig. 3. Tension sutures of silkworm gut. (Brophy: Harelip).

by many that the gasserian ganglion should always be attacked. The best procedure is stated to be section of the sensory root as advocated by Spiller as this gives permanent relief. No attempt being made to remove all or a greater part of the ganglion, the danger of injury to the cavernous sinus is decreased. S. S. Howe.

Brophy, T. W.: Harelip. *Surg. Clin. Chicago*, 1919, iii, 265.

The case demonstrated by Brophy is that of a so-called partial double harelip. There is a separation of the lip in two places, extending about halfway between what should be the vermilion border and the nose. There is also a complete cleft of the palate and a separation of the alveolar process on the left side. The right side is intact. This particular condition is comparatively rare.

The operation for the repair is performed under ether anæsthesia. As the nostrils, especially the left one, are wider than normal, a wedge-shaped piece of tissue is removed at the lower gap so as to contract them. The lip is picked up and a flap made by passing the knife obliquely upward through its entire substance as far as the incision just made. In this way the abnormally dilated nostril is reduced. The procedure is the same on the opposite side except that the piece of tissue removed need not be so wide.

The first consideration is to get the nostrils right, and the second to close the fissure in the lip. In order to avoid a depression in the lip its tissues are split so as to roll out the skin and make it thicker at the border. Any superfluous mucous membrane is then taken off so that the mucous membrane will not overlap the skin or the skin overlap the mucous membrane. Skin is now carefully sutured to skin and mucous membrane to mucous membrane with horsehair. One or two stay sutures all the way across are then inserted to hold the parts together.

Before making the first incision, the nose is closed to exclude blood from the nasal passages. However, as it is extremely difficult to prevent the escape of some blood into the passages above the tampon, Brophy advises washing out the stomach at the completion of the operation in order to get rid of all that has been swallowed. In this way an increase in temperature from the absorption of blood in the stomach is avoided.

The dressing consists of strips of adhesive plaster placed on the face in such a way as to leave the wound open as much as possible. Cuffs of cardboard are put on the child's arms to prevent it from sticking its fists into its mouth. A piece of iodoform gauze is placed in the nose for two or three days to exclude excretion from the stitches. After the gauze is removed, the nose is kept clean with an applicator.

McCauley, D. H., and Worthley, B. L.: The Treatment of Ununited Fractures of the Jaws. Résumé of Work Done by the Dental Department, U. S. A. General Hospital No. 11, Cape May, N. J. *Dental Cosmos*, 1919, lxi, 455.

In this article, which is a continuation, the authors report the following conclusions regarding the treatment of ununited fractures associated with a large loss of bony substance.

1. Wiring teeth is contra-indicated except as a temporary measure.

2. An interdental splint should always be used in fractures of the mandible when there is a large loss of bony substance and especially when only the molars can be used as points of fixation and when the injury is posterior to the last tooth.

3. The pin-and-tube type of interdental splint has advantages far superior to any used heretofore.

4. The jaws should be placed in the position of rest when the fracture is anterior to the angle.

5. When there is destruction of at least half the ramus, only fibrous union can be secured.

6. In the great majority of mandibular fractures associated with loss of substance the posterior fragment should be drawn forward.

7. When a compound comminuted fracture is present at the median line, springiness will often

occur even after primary union has taken place and an apparently perfect result has been obtained. This springiness permits the two bodies of the mandible to swing inward, causing mal-occlusion. In these cases permanent support should be given by fixed bridge work.

8. Immobilization of the jaws alone will not produce trismus.

9. Good food, fresh air, congenial surroundings, and employment of both mind and body are of great benefit in obtaining successful results.

M. N. FEDERSPIEL.

SURGERY OF THE CHEST

CHEST WALL AND BREAST

Lilienthal, H.: The Surgical Treatment of Empyema of the Thorax. *Mil. Surgeon*, 1919, xliv, 582.

Empyema is not as a rule unilocular; therefore drainage by simple incision and insertion of a tube or by rib resection will be sufficient in only about 33 per cent of cases. Instead of breaking into the main cavity, secondary collections may invade other structures, such as a bronchus. Moreover, the lung is often markedly contracted by an inflammatory exudate which forms early and at the end of ten days is tough and unyielding though it may be readily stripped from the lung. Two problems are thus presented, first, the problem of saving life, and second, the problem of preventing deformity. The procedure varies with the type of case as follows:

Group A, acute cases in which the chest is full of pus and there is immediate danger to life: Cyanosis, dyspnœa, and sepsis are present. A radiograph should be made if time permits and a minor thoracotomy performed. If the patient is not improved within six days, a further fluoroscopic examination should be made while he is in the erect position, and this should be followed by a major thoracotomy.

Group B, subacute and chronic cases, often long unrecognized: Radiographs and a fluoroscopic examination should be made with the patient in the erect position. If the empyema is small and encapsulated, treatment may consist in the resection of one or two ribs. Otherwise, a major thoracotomy should be performed.

Group C, chronic cases in which there are sinuses and undrained cavities following operation: These should be carefully studied with the X-ray. The chest should then be prepared for operation by disinfection for from four to six days by Carrel's method. The operation should consist of thoracoplasty with lung mobilization. No operations to collapse the chest wall should be done.

The author describes the operations recommended briefly as follows:

Minor thoracotomy: Local anæsthesia, short incision between the ribs, and insertion of a small thick-walled tube.

Major thoracotomy: General anæsthesia, preferably by the intrapharyngeal method. The incision is made in the seventh interspace, the pleura are opened, and the pus is withdrawn by suction. The wound edges are then separated with rib spreaders and all fluid and coagula removed. Soft adhesions are broken down and the lobes of the lung separated. If a tough confining membrane is present it is incised longitudinally and laterally until the lung expands with coughing or straining. The wound is closed by layers, with drainage at the angles.

Thoracoplasty with lung mobilization: Preliminary disinfection is effected by the Carrel-Dakin method, a watch being kept for bronchial fistulæ. Intrapharyngeal insufflation anæsthesia is used. The incision is made as in a major thoracotomy. From one to four ribs may have to be divided before exposure is sufficient. An old sinus is avoided. The thickened visceral pleura is incised longitudinally and by cross-hatching if it does not peel off readily. The anæsthetist insufflates and distends the lung. The wound is closed in layers. Morphine is then given in full doses for twenty-four hours. Blowing exercises are begun at once.

For anæsthesia by intratracheal insufflation, which is very simple, a foot bellows, an ether bottle, and a catheter are required. The latter is passed through the nostril as far as the pharynx. To distend the lung the opposite nostril is closed and the mouth covered.

E. M. MILLER.

Dodge, W. T.: Empyema at Base Hospital, Camp Sherman, Ohio. *J. Am. M. Ass.*, 1919, lxxii, 1808.

The author states that before deciding on the treatment he would adopt he reviewed the results which had been obtained at this base hospital prior to July 1, 1918.

He found that in 53 cases treated in the surgical service for empyema there had been 23 deaths. Simple thoracotomy with open drainage had been performed in 49 cases and rib resection in 4 cases.

All had been treated with open drainage and instillations of Dakin's solution. The Dakin solution had then been discontinued and 2 per cent formalin in glycerin substituted. While an improvement had been noted with the later method, subsequent experience with these patients had proved disappointing. Fifteen patients treated with Dakin's solution recovered and were discharged. Fifteen remained after the change had been made to formalin and glycerin. Of the latter, 4 were returned to duty. The 11 others were subjected to secondary operations. Two of these died, making the final number of deaths 25 in a series of 53 cases.

The pleural fluids showed the hæmolytic streptococcus in 5 cases while in the majority the non-hæmolytic streptococcus was found.

Simple aspiration as well as aspiration followed by the injection of formalin and glycerin had been tried but both methods had been discontinued in favor of wide-open drainage.

The author treated 3 cases according to the method used in 1918 at the Walter Reed Hospital, the so-called "closed method" of aspirating and irrigating through a 3-millimeter tube. Dakin's solution was used at first and later 2 per cent formalin in glycerin. These cases were subsequently treated by rib resection.

Dodge finally decided to use aspiration merely for diagnostic purposes. When the pleural fluid became purulent, a rib resection was performed under local anæsthesia and two large drainage tubes were inserted. In no case was resection done earlier than seventeen days after the onset of pneumonia. The average period was twenty-five days.

No irrigations or instillations were used during the first ten days. Dakin's solution was used in 5 cases, formalin and glycerin in 5 cases, and 50 per cent glucose in several. Later the only solution employed was physiological sodium chloride solution. The patients treated with Dakin's solution and formalin and glycerin had to be subjected to rib resection later. The pleura in these cases was found at the secondary operation to be covered with a thick layer of organized lymph. From this fact the author concluded that irrigation with Dakin's solution and formalin-glycerin tends to thicken the pleura and prevent expansion of the lungs.

No definite statistics are given as to the number of cases treated without irrigation. In 18 cases irrigation was done with saline solution and in this series there were no deaths. The final results are not mentioned.

Of the 71 patients treated between July 1, 1918, and April 1, 1919, 68 were treated by open drainage. Eighteen of these died. Thirty-six patients recovered and returned to duty prior to April 15, 1919. Ten patients were subjected to secondary operations.

V. P. DIEDERICH.

Gloyne, R.: The Clinical Pathology of Thoracic Puncture Fluids. *Lancet*, 1919, cxcvi, 935.

Careful study of fluids obtained by thoracic puncture gives much information of diagnostic value.

Antiseptics should not be used in preparing the sterile syringe. Clotting in the fluid reduces the value of the examination and can be prevented by the addition of 1½ per cent citrate solution to three parts of the fluid.

The examination consists of determinations of the specific gravity and coagulable protein content, a cell count, film and cultural examinations for bacteria, and immunological tests.

The author points out that when a purulent pleural fluid contains tubercle bacilli it is strongly suggestive of a pneumothorax, even in the absence of clinical signs.

The various types of fluid are discussed and the following conclusions drawn:

1. In a serous fluid, especially if tuberculosis be suspected, coagulation of the fluid should be prevented whenever possible. If a clot forms, it generally contains most of the bacteria and cells and should therefore be examined carefully.

2. More use might be made of immunity tests in serous tuberculous fluids.

3. Though the predominance of the small round cell (so-called lymphocyte count) is almost invariable in simple tuberculous effusions, this is not true in effusions following pneumothorax. In the latter, predominance of polymorphonuclear cells is not uncommon.

4. In the series reported tubercle bacilli were found in 63.6 per cent of pyopneumothorax cases, in 55.5 per cent of serous effusions with pneumothorax, and in 25.7 per cent of apparently simple tuberculous effusions.

5. In the same series the following were the percentages of secondary infections: in pyopneumothorax, 18.2; in serous effusions with pneumothorax 11.1; and in simple tuberculous effusions, none.

6. Contrary to the results of earlier observers, Grégoire and Courcoux found during the war that in cases of hæmothorax clotting did not take place if sepsis could be prevented. Absorption was generally preceded by hæmolysis. They noted also a characteristic cell count—first polymorphonuclear, then mononuclear and endothelial, and finally, eosinophile cells predominating.

7. The cases of empyemata examined by the author showed pneumococci in 58 per cent, streptococci in 12 per cent, staphylococci in 12 per cent, mixed infections in 12 per cent, and other organisms in 6 per cent. The pneumococcus is probably the most prevalent organism, and occurs approximately four times more frequently than the streptococcus.

K. L. VEHE.

Saugman, C.: Thoracoplastics for Pulmonary Tuberculosis in the Vejlefjord Sanatorium (Erfaringer fra Vejlefjord Sanatorium om Thorakoplastik ved Lungentuberkulose). *Ugeskr. f. Laeger*, 1919, lxxxi, 585.

Saugman refers to the results of thoracoplastics for lung tuberculosis reported in Scandinavian literature by Jacobaeus and Key, Nyström, Bull, and others. He gives also his own experiences based on the treatment of 26 cases during the last two years at his Vejlefjord Sanatorium. In these, treatment by artificial pneumothorax had been tried first without success.

The operation is performed usually with the aid of local anæsthesia. Large doses of the anæsthetic are necessary to block the nerves. The danger of such large dosage is shown by Saugman by reference to the case of a young girl who was treated by preliminary injection of veronal and morphine followed just before the operation by the injection of 190 cubic centimeters of ½ per cent novocain solution. The operation in which five ribs were sectioned and sutured lasted only fourteen minutes, but the patient

died shortly afterward. Such an occurrence, however, is exceptional. As a rule, local anæsthesia is easier for the patient and greatly facilitates the operation.

A tabular statement is given showing the amounts of rib removed, generally from the fourth to the eleventh. The average length resected was 134 centimeters. Subperiosteal resection of the ribs appears to be the most advantageous and it is well to perform the operation in two stages. After the resection, the removal of adhesions, and the emptying of the pus pockets, the thorax collapses very considerably on the side operated upon. After hæmostasis is effected the thorax is closed with catgut sutures in two layers.

Morphine, pantopon, etc., are given after the operation to allay pain and for stimulation.

In 12 of 18 cases there was apparently complete disappearance of the tuberculosis bacillus from the sputum after a few months. Cases of recurring hæmoptysis were generally much relieved by operation but in one instance it recurred fatally seventeen days afterward. There were also 2 other deaths, 1 from pulmonary embolism and the other from influenza. The latter occurred several months after operation when the patient was free from symptoms of tuberculosis.

The article includes a tabular statement of all cases operated upon with case histories and several illustrations. W. A. BRENNAN.

Egidi, G.: The Indications and Technique of the Operative Treatment of Mammary Cancer (I criteri direttivi e la tecnica per la terapia operatorio del cancro della mammella). *Policlin.*, Roma, 1919, xxvi, sez. prat., 385.

Egidi reviews the ramifications of cancer of the breast and the metastatic outbreaks with their routes. The various operative methods of meeting the conditions are discussed critically, especially the techniques of Handley and Halsted. The review leads to a description of the method of breast amputation practised by Tansini in Italy since 1895. This is a plastic method destined to complement the extensive removal of tissues in this destructive operation and to fill the gap left by the extensive removal of the breast and its adjacent tissues. It consists essentially of cutting a strip including skin and muscle from the region of the back and twisting this flap around to the site of the removed breast. The circular incision around the breast is prolonged upward until the two ends meet in the axilla; from here a new U-shaped incision is started downward in the back, care being taken to spare the branch of the circumflex artery in this region which supplies nourishment to the pedicle of the strip. The pedunculated flap is well nourished and repairs the loss created by the removal of the pectorals.

Tansini's flap has been used by many surgeons in Italy and also in France with good results.

W. A. BRENNAN.

TRACHEA AND LUNGS

Jervey, J. W.: Bronchoscopic Side-Lights on Bronchoscopic Cases. *South. M. J.*, 1919, xii, 333.

Jervey offers the following bronchoscopic sidelights on bronchoscopic cases which he reports:

1. Don't take anybody's word for what he has or has not seen in peroral endoscopy. Be a Missourian.

2. Don't take anybody's word as to what area he has or has not explored in the course of endoscopic peregrinations. Look for yourself.

3. Don't take anybody's diagnosis of the presence of a foreign body in the air passages or œsophagus, no matter how clear and definite the anamnesis. Make your own diagnosis.

4. Don't decline to use a certain mechanical principle or a certain instrument just because a colleague has previously tried it in the same case and failed. Difficulty for one man is opportunity for another.

5. Don't forget—to paraphrase the famous dictum of the dusky Reverend Jasper of Virginia, in his reference to the sun—that sometimes "the foreign body do move."

6. Don't forget that the second peroral endoscopy performed on the same patient is likely to be easier than the first and the third easier than the second. You owe it to your patient and to yourself to prove it.

7. Don't be in too great a hurry to refer your patient to a colleague for operation, even though you know he is a better man. O. M. ROTT.

Graham, E. E.: Foreign Bodies in the Air and Food Passages. *Arch. Pediat.*, 1919, xxxvi, 325.

The observations of the writer are summarized as follows:

1. According to statistics about 66 per cent of the cases of foreign bodies in the air passages are those of children.

2. Case histories show that foreign bodies are often overlooked because of the period of latency of symptoms following the first dyspnœa and choking attack.

3. The symptoms vary greatly. In one instance, for example, the presence of a peanut kernel may cause an acute inflammatory reaction and later pneumonia, while in others metal objects may remain in the lung for a very long time and cause comparatively little damage.

4. A foreign body in the œsophagus that does not cast a shadow on the X-ray plate may often be diagnosed by giving the patient a bismuth-filled capsule. The X-ray will then show this capsule held in position by the foreign body.

5. Foreign bodies are very rarely coughed up.

6. The presence of a foreign body should be suspected if the following conditions are present: an unexplained leucocytosis, localized symptoms in one lung that do not clear up under treatment, the absence of tubercle bacilli in the sputum, and a gradual decrease in weight and strength.

7. Bronchoscopy should be performed as soon as possible. Children do not require an anæsthetic.

8. The necessity of taking a radiograph of every patient who gives a history of having swallowed a foreign body cannot be too strongly emphasized.

9. The asthmatoid wheeze is a symptom of considerable importance. S. S. HOWE.

PHARYNX AND ŒSOPHAGUS

Austoni, A.: The Treatment of Severe Cicatricial Œsophageal Strictures (Contributo all' indirizzo di cura delle stenosi cicatriziali de alto grado dell' esofago). *Policlin.*, Roma, 1919, xxvi, sez. chir., 150.

Austoni treats œsophageal cicatricial strictures by progressive dilatation. He gives clinical histories of 4 such cases and reviews the literature. From this review and his personal experience he concludes that:

1. Absolutely impermeable cicatricial stenoses of the œsophagus are extremely rare, in fact exceptional; the stenoses observed usually have a degree of permeability which permits passage of at least a fine bougie.

2. All cicatricial œsophageal stenoses. even those which are least permeable and those which are extensive and old, may be successfully treated by dilatation. This procedure is much less dangerous and is more often successful than any other mode of treatment.

3. The first stage of the dilatation treatment is to pass a bougie through the stricture, which prepares the strata and acts as a guide for the subsequent manœuvres. This may be effected either through the mouth or through a preformed gastric fistula. The buccal route is indicated for stenosis situated in the upper cervical and thoracic regions and the retrograde route for cases in which it is lower and those which cannot be managed from above.

4. Œsophagoscopy is of special use in facilitating dilatation through the mouth. Also of value are the methods customarily used in cases of urethral stricture. Gastric endoscopy, with the indirect vision apparatus, is recommended for retrograde sounding. If during the examination the patient is made to swallow a little milk, which passes into the stomach in strings, it will facilitate the location of the cardia.

5. The best method of treating severe, extensive, and old cicatricial œsophageal strictures is that of intermittent progressive dilatation, through the buccal route with the aid of œsophagoscopy, and by the retrograde route with the aid of a directing thread. Each sound should be allowed to remain in place for about two hours. In infants, however, and in cases of stenoses situated high and conveniently, metallic dilators may be used as in the treatment of urethral strictures.

6. Hypodermic injections of fibrolysin should be given with the dilatation treatment of cicatricial stenosis.

7. The average duration of the treatment is about three months. It is desirable, however, to resume the sounding every one or two months for about a year to prevent recurrence.

No recurrence has been observed up to the present time in any of the author's cases, but he believes that patients should be kept under observation for from five to ten years before it can be assumed that the cure is definite. W. A. BRENNAN.

SURGERY OF THE ABDOMEN

ABDOMINAL WALL AND PERITONEUM

Hupp, F. L.: Abdominal Drainage. *W. Virginia M. J.*, 1919, xiii, 441.

This subject is of great importance and there are many conflicting opinions as to when the peritoneum can be trusted to push back an invading foe from the abdomen independently. The great capacity of the peritoneum for resorption and its power to put up a stiff defense has led the present-day surgeon to drain less and less.

According to Munro, there are three factors which should be considered when there is an inclination to dispense with drainage following peritoneal infections: (1) the individual equation as regards susceptibility to infection; (2) the virulence of the infection; and (3) the presence or absence of distinct foci of infection.

Posture has become a very important adjunct in the treatment of peritoneal sepsis. Fowler's position is most commonly adopted. The basic principle of postural treatment is that the most active and rapid absorption into the lymphatics takes place from the diaphragmatic and omental peritoneum, while the pelvic peritoneum is very slow to absorb. The author mentions the importance of transporting patients in the sitting position when peritoneal sepsis is suspected.

Bowlby has stated that very probably drainage of war wounds of the abdomen is of little use except in local lesions. He reports an operative mortality of 50 per cent, which in civil practice would be exceedingly high. but was considered good under existing conditions. Gibson stated that the treatment of war wounds is a highly specialized branch of surgery and the rules of civil practice apply hardly at all at the front. Multiple wounds gave a mortality of 68 per cent as against 20 per cent for single wounds. An operation was performed whenever the pulse was perceptible. Drainage was instituted in only a few of these cases, and then was continued for only from twenty-four to forty-eight hours.

In cases of intra-abdominal abcess cavities, whether of appendix or tubal origin, it has been repeatedly demonstrated that the charted microbic curve progressively falls to the zero line when the installation tubes have been carefully placed and

the technique of Carrel rigidly enforced. It should be emphasized, however, that Carrel never intended his system of wound sterilization as a substitute for early clean surgery and the removal of all foreign material.

The drainage tube itself is condemned by a great many who claim they have obtained brilliant results without it. Hathaway substitutes a piece of soft folded rubber for the tube. He believes that if more surgeons would do this they would find not only that their results are very much better, but also that their outlook on surgery is totally changed. Applying his experience in war surgery, he began by sewing up ordinary staphylococcic abscesses of the subcutaneous tissues after incision and wiping out with "bipp." These wounds healed by first intention. He then went a step further. After operating upon a case of perforated gastric ulcer and washing out the peritoneal cavity with flavine, he closed the abdomen up tight. The result was healing by first intention and uninterrupted recovery. The same procedure was followed in a case of compound fracture of the tibia and fibula with a large external wound, and a case of gonococcal peritonitis following rupture of a fallopian tube. The result in both cases was healing by first intention.

In cases of questionable drainage for acute appendicitis the author has invariably used the McBurney "gridiron" incision as this is less likely to be followed by a hernia and affords adequate drainage.

Long has recorded 39 cases of acute appendicitis, some of the gangrenous type, in each of which he closed the abdomen. His results were gratifying in 37 of the series.

Kelly definitely sets down essential points to be remembered. The drain is only a drain to a limited extent and for a short time, acting chiefly as a protective pack. It is essential that the whole septic area should be drained. The drain must be loose in order that it may absorb rapidly, and must have exit through a large orifice.

The author prefers the split-rubber tube wrapped with gauze and covered with a rubber dam which is rolled cigarette fashion and placed at the bottom of the septic pit. Care must be taken to select pliable pure rubber in order to prevent the perforation of an intestine or large blood-vessel due to pressure of an unyielding hose-pipe tube.

In respect to tuberculous peritonitis it has been stated that: (1) those afflicted with tuberculosis do not die from the disease but from associated sepsis; (2) the abdomen should never be drained in tuberculosis of the peritoneum; (3) the pure products of tuberculosis in the pelvis should be removed, whenever possible, by clean, careful operation.

The whole subject of drainage is based upon certain definite scientific principles which must be applied with judgment to each individual case. The surgeon should therefore get hold of the principles and should not follow an unvarying ritual in every case of pus abdomen which comes to the operating table. E. A. PRINTY.

Montoya, J. M.: Umbilical Hernia (Hernia umbilical). *Rep. de med. y cirug. de Bogotá*, 1919, x, 338.

During the past six years Montoya has operated upon 132 cases of hernia in infants of which only 8 were cases of umbilical hernia. An equal or greater number of cases were treated mechanically.

Mechanical treatment of umbilical hernia in infants is quite satisfactory if sufficient time—generally from a year to a year and a half—can be devoted to it. Otherwise operation is necessary. In children not more than 2 years old the most practical method is to make an incision directly over the tumor, carefully dissect the sac and, if it is small and not adherent, reduce it. This can be done without opening the peritoneal cavity by approximating the edges of the ring with deep silk sutures, and then closing the skin with interrupted sutures. The skin sutures are removed on the eighth day. The use of a band is recommended for at least six months after operation. If the sac is very large or there are adhesions, it ought to be resected and the peritoneal opening sutured with catgut.

In the cases of older children the author prefers the technique described by Mayo which he used in the treatment of 8 children ranging in age from 3 to 10 years. One of them had been operated upon previously by the more rapid technique of obliterating the ring by freshening the muscular edges. The hernia recurred, however, within six months. The re-operation by the Mayo method has given satisfactory results. W. A. BRENNAN.

Cole, P. P.: The Radical Cure of Femoral Hernia by the Inguinal Route. *Brit. M. J.*, 1919, i, 763.

The author strongly advocates the use of the inguinal route in the radical cure of femoral hernia. He uses the incision which is usually employed for inguinal hernia and carries the dissection down to the transversalis fascia by dividing the external oblique aponeurosis, and by dislocating the cord or round ligament. In incising the transversalis fascia the extraperitoneal fat is exposed and the epigastric vein lying to the inner side of the epigastric artery marks the outer edge of the peritoneal diverticulum that leads to the femoral ring. Exposure of the outer aspect of the neck of the sac can then be done satisfactorily and blunt dissection will isolate the neck of the sac so it can be determined whether anything is passing through it from the peritoneal cavity.

In some instances by further dissection the sac can be delivered from its position in the thigh. It is then opened and ligated above the juncture with the peritoneal cavity. The iliac vessels are then tracted outward and the femoral ring defined. Three sutures are placed through the conjoined tendon above and below through the thickened margin of the femoral ring—Cooper's ligament. The outer suture, being

close to the vein, should be inserted first. The approximation of these tissues forms a new bed for the cord or round ligament, and all direct communication with the peritoneal cavity is abolished. When the sac, although empty, can be delivered from the thigh, Cole amputates at the neck and then closes the resulting hole in the peritoneum. He does not leave the empty sac in position, however, but removes it by undercutting the lower lip of the incision. If the sac is not empty, the peritoneal cavity is opened immediately without any attempt at delivery of the sac. In strangulated femoral hernia the operation has even greater advantages.

The advantages of the inguinal route are summarized as follows: (1) it provides a certain means of cure; (2) it permits a direct view of the essential structures; (3) abnormal conditions can be recognized and dealt with; (4) resection can be undertaken through the original incision; and (5) it is neither difficult nor complicated. D. C. BALFOUR.

GASTRO-INTESTINAL TRACT

Kessler, E. H.: A Plea for the Early Recognition of Stomach Malignancies. *J. Missouri M. Ass.*, 1919, xvi, 181.

The author emphasizes the importance of the early recognition of cancer of the stomach. In addition to the history and laboratory and clinical findings the physician should have recourse to the X-ray and, if necessary, an exploratory incision. The diagnosis should not be delayed for the appearance of anorexia, vomiting, hæmatemesis, melena, occult blood in the stools, dysphagia, loss of weight, and the formation of a palpable tumor with dilatation of the stomach.

E. C. ROBITSHEK.

Urrutia, L.: A Case of Brinton's Linitis Plastica (Sobre un caso de linitis plastica de Brinton). *Arch. espan. de enferm. d. aparat. digest.*, 1919, ii, 201.

Urrutia reports a typical case of Brinton's linitis plastica in which he performed a total gastrectomy which was followed by recovery.

The patient was a man aged 26 years who for about a year vomited several times a day after the ingestion of food and had lost much weight. On physical examination a large movable tumor could be felt in the epigastrium extending from the left costal border to the umbilicus. Examination of the stomach contents showed the absence of free hydrochloric acid. On radiologic examination a diffuse infiltration was observed throughout the stomach which preserved its form only in the region of the fundus. There was also pyloric insufficiency. The condition was diagnosed as Brinton's linitis.

At operation the stomach was found to be cylindrical in shape, hard, and intimately bound to the liver and the transverse colon by fibrous adhesive masses. It was liberated with great difficulty, the coronary artery ligated, the duodenum sectioned about 3 centimeters from the pylorus, and the end of the duodenum sutured. The stomach which was then connected only with the œsophagus was brought to the surface and sectioned high in the cardia region. This having been done, an anastomosis of the œsophagus to the jejunum was made according to the Reichel-Polya method. The patient stood the long operation well.

For several days following there was some diarrhœa and an intense painful colitis with mucus and pus in the stools. After two weeks, however, the discharge became normal and the remaining symptoms cleared up. Several months after leaving the hospital, the patient's weight had increased considerably, the fæces were solid, the appetite good, and the general condition quite satisfactory.

Radioscopy showed that the jejunum had undergone marked dilatation and retained the food reaching it directly from the œsophagus for some time.

On histologic examination of sections of the pylorus and other parts of the removed organ no evidence of malignant epithelial neoformations was found.

Photographs of the removed stomach are given and the author discusses the literature of plastic linitis. W. A. BRENNAN.

Lecène, P.: Inflammatory Stenosis with Spasm of the Cardia; Considerable Œsophageal Dilatation; Cardioplasty; Recovery (Sténose inflammatoire avec spasme du cardia; dilatation œsophaggienne considérable; cardioplastie; guérison). *Bull. et mém. Soc. de chir. de Par.*, 1919, xlv, 710.

Lecène's case was that of a soldier in whom examination showed a stenosis of the cardia and considerable œsophageal dilatation. The diagnosis made was "spasmodic or organic stenosis of the cardia, perhaps due to the cicatrization of an ulcer." Lecène decided to operate directly upon the cardia and not by simple gastrostomy. By means of an incision along the left chondrocostal margin the cardia was reached without difficulty. The œsophagus above the cardia was found to be strictured by a very thick fibrous band which encircled the muscles. Near the cardia was an inflamed ganglion. As the stricturing band included several small vessels it was sectioned between ligatures. There was no sign of a neoplasm. The lesions being similar to those found in the pyloric region near a pyloric ulcer, the author performed a cardioplasty following the technique of a pyloroplasty. The patient made a good recovery.

When in cases of stenosis surgical intervention is necessary, the author believes that simple gastrostomy should be performed only as a last resort as it does not always overcome the stenosis and results in considerable trouble if a subsequent operation is required.

Œsophagogastric anastomoses are extremely severe operations which necessitate opening the pleura and there is no certainty in regard to the prognosis or as to the value of their results.

The only other surgical treatment is cardioplasty as executed by the author in this case, a method which appears to be the simplest and most logical.

While Lecène does not draw any general conclusion from the success in this particular case, he calls attention to three points in the technique: (1) placing the patient in dorsolumbar lordosis; (2) definite resection of the edge of the left costal cartilage; (3) the use of a head mirror during the whole operation. W. A. BRENNAN.

Hernando: Suprarenal Insufficiency and Gastric Ulcer (Insuficiencia suprarenal y ulcera gastrica). *Med. Ibera*, 1919, vii, 156.

The pathogenesis of gastric ulcer has yet to be cleared up satisfactorily. That the etiology is varied is shown by the fact that ulcer may result from gastric, appendicular, and arteriosclerotic processes, and Addison's disease. In the author's opinion gastric ulcer is usually secondary, and rarely, if ever, primary.

Recently there have come to Hernando's notice several cases of ulcer traceable to suprarenal insufficiency. This is in accord with his contention in a previous article that the glands of internal secretion have an influence upon the functions of the digestive organs and that ulcer may be due to a disturbance of the endocrine processes.

In this article it is pointed out also that the vagus nerve has a part in gastric pathology and the conclusion is reached that all patients with ulcer are vagotonic. The mechanism of the production of ulcer is explained by the statement that the vagus stimulates contractions which, by interrupting the circulation, form ischæmic zones and that such zones are easily attacked by hydrochloric acid.

Organotherapy fails as a method of treatment because usually it is instituted in the final stages of the condition when the effects of the initial cause are irremediable. W. A. BRENNAN.

Friedenwald, J.: Personal Experiences in the Treatment of Ulcer of the Stomach. *Med. Clin. N. Am.*, 1919, ii, 1575.

According to our present understanding of the etiology of gastric ulcer, prophylaxis includes the removal of sources of focal infection and the use of a carefully selected diet. With the appearance of the first symptoms the patient should be placed on an exclusively milk diet.

Medical treatment is indicated in all simple, uncomplicated cases of gastric and duodenal ulcer. The results of ambulatory treatment are unsatisfactory. In severe cases the patient should be put to bed for from six to eight weeks or longer. The writer records recovery in 72 per cent of cases treated by the Leube method, in 66 per cent treated by the Lenhartz method, and in 86 per cent treated according to the Sippy method. These methods are briefly described.

If there is excessive vomiting, pain, or hæmatemesis, food by mouth should be withheld for three to five days and rectal feeding substituted, preferably by the Murphy drip method, using normal salt solution containing glucose. Duodenal feeding by the use of the Einhorn tube is valuable, especially when there is severe nausea and vomiting. Atropin, which decreases the secretory and motor functions of the stomach by depressing the vagus fibers, appears to have an almost specific effect in some instances. Scarlet red is a valuable adjuvant, superior to bismuth, especially in the treatment of ambulatory patients.

Operation is indicated when there are complications and when the ulcer has resisted thorough medical treatment, particularly in cases accompanied by severe and persistent pain, vomiting, or hæmorrhage, and in stenosis due to pyloric or duodenal ulcers. Prompt operation is indicated in all cases of perforation and for ulcers accompanied by tumor formation. The type of operation naturally varies according to the situation and extent of the ulcer.

According to Finney and the writer, the results of pyloroplasty and pylorectomy are far better than those of gastro-enterostomy. From a comparison of 100 cases of pyloroplasty with the same number of cases of gastro-enterostomy, the following conclusions were drawn:

Pyloroplasty is indicated chiefly for the relief of pyloric stenosis due to chronic ulcers situated at or near the pylorus and on either side of it and resulting from the cicatricial contraction following the healing of such ulcers. It is often useful in cases of bleeding ulcers of the lesser curvature, in cases of duodenal ulcers not well controlled by medical treatment, and in chronic dyspepsias due to ulcers not relieved by medical treatment. The special advantage of pyloroplasty lies in the opportunity afforded for the excision of all ulcers in the anterior wall of the stomach and duodenum after direct inspection of the affected part, and the application of the operation to ulcers situated in the posterior walls. It does not greatly disturb the normal relation between the stomach and intestines. Most objections to the operation are more fanciful than real. The only contra-indications are the inability to mobilize the duodenum when adhesions are too dense and when thickening and infiltration about the pylorus due to hypertrophic forms of ulcerations are present.

The immediate as well as the final results of pyloroplasty are most encouraging. Gastro-enterostomy should be limited as far as possible to the relief of pyloric stenosis due to malignant disease. In nearly all other conditions pyloroplasty and pylorectomy are safer and more satisfactory. Finney and the writer report 90 per cent of immediately successful recoveries and 86.6 per cent of satisfactory end-results after pyloroplasty, and 82 per cent of immediately successful recoveries and 77.2 per cent of satisfactory end-results after gastro-enterostomy.

Baetjer and the author have pointed out that the degree of healing can be determined by means of the X-ray. Though a patient may feel perfectly well after rest-cure treatment, a second X-ray examination often shows the same characteristic signs as the

first. In such patients symptoms may recur after the ordinary diet is given. By repeated X-ray observations it can be observed when the ulcer has healed.

Relapses are often due to dietary indiscretions following the "cure." The patient should be placed for some months upon a carefully regulated diet of acid-free and easily digested food, with intermediate feedings and alkalies. It is desirable to have patients return every three or four months for a year or more in order to determine the ultimate result of the treatment.

Diets used during the Sippy cure and diets recommended following ulcer treatment are appended.

W. H. NADLER.

Macdonald and Mackay: The Immediate and End Results of Gastro-Enterostomy for Gastric and Duodenal Ulcer. A Study of 330 Cases (Los resultados inmediatos y lejanos de la gastro-enterostomía en la úlcera del estómago y duodeno. Estudio de 330 casos). *Rev. españ. de cirug.*, 1919, i, 253.

In a study of the results after gastro-enterostomy it was found that gastrojejunal ulcers occur in 30 per cent of the cases. The question arose also as to whether this complication does not occur even oftener since undoubtedly all cases are not operated upon.

It is possible that the secondary disturbances observed in patients who have had a gastro-enterostomy may originate from less advanced lesions at the site of the anastomosis. It is evident that some of the symptoms are due to renewed activity of ulcers in the vicinity of the pylorus or spasmodic contractions in the ulcerated areas since many surgeons have reported complete relief from these secondary symptoms following a pylorectomy performed months or years later.

It is possible that with greater experience the treatment of the ulcerated areas may become more radical. Although pylorectomy has a definitely higher mortality, it may replace gastro-enterostomy in certain cases if with improved technique it becomes as safe and especially if the pylorus is not definitely obstructed or inflammatory lesions do not predominate. When there is cicatrical obstruction of the pylorus gastro-enterostomy is a very beneficial operation.

It is probable that in the next ten years a very careful study of the type of lesion revealed by operation, the immediate mortality, the end-results, and especially the incidence of new ulcers, will be the factors upon which the decision between the two operations will be based.

Gastro-enterostomy has been on the whole the best therapeutic treatment of gastric diseases, completely curing a large number of such patients condemned to certain death by inanition and for whom medical treatment is powerless. It will always be the method of choice for the patient who has been weakened by the disease. W. A. BRENNAN.

Foxworthy, F. W.: The Medical Treatment of Duodenal Ulcer, with Special Reference to the Treatment of Hæmorrhage. *J. Indiana M. Ass.*, 1919, xii, 152.

Medical treatment is indicated in cases of simple duodenal ulcer, in most hæmorrhagic cases, and occasionally after operation.

The author's methods are illustrated in a detailed case report. Among the various means of controlling hæmorrhage which are reviewed, blood transfusion, intravenous injection of normal horse serum, and intramuscular injections of whole blood are recommended.

Absolute rest in bed, preferably in a hospital, is essential. Patients whose cases are severe should not be permitted to walk before from six to eight weeks.

In both simple and hæmorrhagic cases diet is of particular importance. The author follows a dietary schedule which may be divided into five stages:

1. Nutrient enemata. For a period of from four to seven days during which only chipped ice is permitted by mouth the patient is given rectal feedings and the required medication by the Murphy drip method at six-hour intervals after cleansing enemata of normal salt solution.

2. Liquid diet. In the beginning of a period lasting from one to two weeks only the whites of two eggs or cream are given at three-hour intervals. The amount is then gradually increased.

3. Semiliquid diet. This diet is continued for one week and permits the substitution of soups and purées at one or more feedings.

4. Semisolid diet. Porridge, mashed potatoes, custards, and eggs are added as albumin water is withdrawn. This diet is continued for one week. If ulcer symptoms recur, however, the liquid diet is substituted for all feedings.

5. Solid diet. In this diet lean meat broiled and finely divided is added until the patient is finally given the ordinary diet prescribed for ambulatory cases of ulcer.

During the period of liquid feeding daily gastric lavage with 1 per cent of sodium bicarbonate is given. Acidity should be counteracted by the smallest effective amount of alkalines such as calcined magnesia and sodium bicarbonate. Bismuth is of value in the absence of hæmorrhage. Muscular contractions may be controlled by the use of increasing doses of tincture of belladonna temporarily withdrawn when the desired effect has been obtained. Special care of the mouth and the eradication of evident and potential foci of infection in the teeth and gums is important. W. H. NADLER.

Ombredanne, L.: Total Volvulus of the Intestine of Chronic Nature (Volvulus total de l'intestin à évolution chronique). *Bull. et mém. Soc. de chir. de Par.*, 1919, xlv, 688.

The case reported was a case of volvulus of all of the intestines, large and small, the symptoms of which had persisted for more than ten years and

were cured by untwisting. The patient was a girl about 12 years old who since 2 years of age had been subject to repeated attacks of vomiting. The vomitus was greenish and bilious in character. A thorough examination of the patient in the hospital, including a radioscopic examination, led to the diagnosis of duodenal or duodenojejunal stenosis. The torsion which was first discovered at operation amounted to one and one-half turns. This was untwisted and the child left the hospital on the seventeenth day in excellent condition.

The points of special interest in this case were:

1. The condition was a volvulus rather than intussusception.

2. Total volvulus is rare. The majority of cases on record are cases of partial volvulus. The author knows of only one other instance of complete torsion of all the intestines both large and small.

3. The volvulus was not accompanied by occlusion of either the large or small intestine.

4. There was absence of coalescence of the mesocolons, indicating that the condition was a true volvulus. In the author's opinion this congenital malformation is a necessary and essential condition for a really total intestinal volvulus though it is not a sufficient cause alone. He is inclined to believe that by itself, without volvulus, it may produce symptoms of pain and biliary vomiting intermittently.

5. The symptoms due to the volvulus had persisted for ten years. In this particular the case is unique. In all of the reports in literature read by the author there was a double occlusion which led to a rapid termination either by death or surgical intervention. A few cases are recorded of incomplete torsion followed by spontaneous untwisting. In the author's case there were no spontaneous intermittent torsions followed by untwisting.

6. The volvulus was treated successfully by untwisting and fixation of the colon by catgut sutures.

W. A. BRENNAN.

Lewis, W. A.: Intestinal Obstruction and Its Relation to the General Practitioner. *Canadian M. Ass. J.*, 1919, ix, 538.

Practical hints in regard to the early recognition and management of intestinal obstruction are given in this article.

The author emphasizes the importance of recognizing these cases early and operating upon them immediately. The physician should not wait for the classical picture to develop because this means an advanced case. The failure to pass flatus is significant of obstruction even though high enemata may return fæcal matter. In giving enemata air must not be introduced into the bowel as its return may be mistaken for flatus.

Strangulation accompanying obstruction adds to the gravity of the case as a disturbance in the circulation of the bowel reduces its vitality, injures the mucous epithelium, and promotes the absorption of toxins.

The author quotes Deaver: "Acute abdominal pain which causes vomiting unassociated with diarrhœa in nine cases out of ten is due to a condition best treated by immediate operation."

The operation should be confined to the simplest procedure that will produce good drainage.

The conclusions drawn are as follows:

1. The rapidity with which the accumulation of deadly toxic material takes place in the gut above the obstructing point and the danger that is thereby added to the simplest abdominal procedures are not sufficiently appreciated.

2. It is the gangrene consequent upon delay, the peritonitis set up by the migration of organisms through the damaged walls, the absorption of poisonous accumulations in the gut, and the necessity for performing extensive and less favorable operations on account of the added pathology due solely to delay that are responsible for the usually high mortality.

3. In the majority of our textbooks the characteristic features are carefully delineated and the occurrence of fæcal vomiting emphasized, but nowhere is it stated that to wait for classical symptoms is in a large percentage of cases to invite death to the patient and court condemnation of the medical attendant.

4. The physician should explain to the patient that he suspects intestinal obstruction and that surgical interference may be necessary.

5. Morphia should not be given.

The author reviews experiments on the toxæmia in intestinal obstruction and reports nine cases.

K. L. VEHE.

Zeno, L.: Exposition and Criticism of the Theories of Lane on Chronic Intestinal Stasis. (Exposición y crítica de las teorias de Lane sobre la extasis intestinal crónica.) *Rev. méd. de Rosario*, 1919, ix, 118.

In the first section of his article the author explains Lane's theory concerning the alteration of bodily structure by the pressure and tension produced by the attitude of the body during work and rest, using as an example the variation so produced in the skeleton and showing photographs of roentgenograms.

In the second section he applies these same laws to the alteration in the intestines and mesentery which according to Lane cause chronic intestinal stasis. He sums the matter up as follows: Chronic intestinal stasis is due to mechanical interference. Lack of equilibrium between the postures of work and rest causes displacement of the abdominal viscera, especially the digestive organs. This results in retardation of the fæcal current. The extra weight is then opposed by the formation of membranes, which, at first beneficial, become fibrous and produce flexures and dilatations. The primary cause being still in force, a vicious circle is thus inaugurated. Lane, therefore, considers the condition to be purely mechanical and the treatment, surgical.

In the third section of his article Zeno tells of the opportunities he has had to study with Lane and to pursue similar studies anatomically on cadavers and at the operating table. In his critical remarks he covers the following points: (1) the origin of peritoneal membranes; (2) the origin of chronic intestinal stasis; (3) the therapeutic, medicosurgical, and prophylactic indications; and (4) the significance of chronic intestinal stasis in general pathology.

The term "chronic intestinal stasis" he states is unsatisfactory and a new term must be sought which will serve for all the many and complicated cases of alteration of the digestive and nutritive functions.

In the remainder of the article the author advances the opinion that the various bands of Lane are not purely mechanical, but the result of a coalescing of the serous surfaces of the intestinal and parietal peritoneum. He takes up each location where such bands occur and shows how these serous surfaces are brought into intimate contact under various normal and abnormal circumstances for a sufficiently long time to cause such coalescence. He considers practically all of Lane's constricting bands normal, rarely anomalous, and very seldom if ever pathologic. M. M. MATTHIES.

Goetsch, E.: The Occurrence of Gastric Mucosa in a Case of Meckel's Diverticulum Producing Intestinal Obstruction. *Bull. Johns Hopkins Hosp.*, 1919, xxx, 143.

The occurrence in the human body of aberrant glandular tissue, at times in places far removed from the mother tissue, is a subject not only of general interest and of special interest to the embryologist, but of importance also to the pathologist and surgeon who frequently meet with abnormalities arising from such aberrant tissue.

The author's purpose in making this report is to record such an instance occurring in a case of partial obstruction caused by Meckel's diverticulum in which at operation a striking variation was discovered in the mucous membrane of the distal half of the diverticulum. This area was differentiated strikingly from the proximal mucosa by a sharp line of demarcation and a difference in color, surface character, and thickness. On subsequent sectioning, it proved to be of the precise character of gastric (fundus) mucosa, containing the typical gastric glands (foveolæ gastricæ) composed of the two distinctive types of cells, the parietal and chief, each of which presented its characteristic of morphology and staining reaction. Goetsch desires also to explain the probable embryological origin of this gastric tissue in Meckel's diverticulum with a view to throwing further light upon the occurrence of aberrant glandular tissue at the umbilicus and in the remains of the omphalomesenteric duct.

The case is reported of a man, 19 years of age, who presented before operation symptoms and signs suggestive either of acute appendicitis or partial intestinal obstruction. On examination, there was found just below the umbilicus a scar which had been produced by a former operation for an abscess. Upon subsequent operation it was found that the small bowel had become strangulated over a thick, fleshy cord consisting of Meckel's diverticulum and some adherent omentum which fastened the former to a point on the anterior abdominal wall just below the umbilicus. The Meckel's diverticulum with the adherent omentum was excised and the patient made an uneventful recovery.

Upon examination of the open diverticulum there was found in its distal third or fourth portion an area of thickened, irregular, granular, dark red mucosa which contrasted sharply with the proximal pale, finer mucosa which was of intestinal character. Furthermore, upon careful histologic examination this distal segment was found to consist of a mucosa definitely resembling in every particular that of the gastric fundus region. The glands were precisely of the fundus type and showed the characteristic zymogen granules of the chief cells and the eosinophilic granules of the parietal cells as characteristic in the glands of the stomach.

Upon a careful search of the literature it was found that a number of cases have been reported of the occurrence of gastric mucosa at the umbilicus in the form of polyps or fistulæ. Other aberrant tissues, such as pancreas, have been described along the intestinal tract, and even in one instance in a nodule at the tip of Meckel's diverticulum and connected with its lumen. Another interesting case reported is that of Van Heukelom in which a nodule of mucosa was found at the tip of Meckel's diverticulum, constricted off from it, not connected with the lumen, but attached by a fibrous cord. This mucosa proved to be of pyloric nature. The case referred to by the author is the only one of gastric mucosa occurring in the wall of Meckel's diverticulum and in free communication with its lumen. Careful histologic examination was made necessary because of the rather uncertain findings reported by previous authors and because of the various theories which have been constructed to explain the occurrence of these aberrant tissues at the umbilicus.

The finding in the author's case of gastric mucosa in Meckel's diverticulum, which it is agreed quite generally is a definite remains or persistence of the vitelline or omphalomesenteric duct, makes it appear certain that these aberrant tissues occurring at the umbilicus, in fibrous cords, and in Meckel's diverticulum, have a uniform origin, namely, from the entoderm of the original intestinal tube or yolk stalk. It was very important to complete the evidence that these aberrant tissues may arise anywhere along the tract of the original omphalomesenteric duct in order to answer the various hypotheses.

After a review of these hypotheses and in view of the evidence that has been brought forward, the best explanation for the occurrence of these structures is that the original entodermal lining of the intestinal tube and omphalomesenteric duct possesses potentialities of development into any of the

glandular structures of the adult intestinal tract or of its accessory glands. Under the influence of certain circumstances, which we do not understand, groups of cells may retain one or the other potentiality and develop into a glandular tissue very different from the surrounding glandular tissues and resembling the adult organ, such as stomach or pancreas, which may be far removed.

The finding in the author's case of gastric mucosa in Meckel's diverticulum effectively answers the various theories that the gastric growths at the umbilicus may have arisen by constriction or separation from gastric diverticula in the early fœtus, or that a differentiation in the mucosa or in these aberrant tissues is brought about by the presence or non-presence of the bile, or that irritations, inflammations, or fœtal inclusions at the point of union of the blastodermic layers are necessary. In fact, with the findings in this case there is good evidence for believing that these aberrant tissues arise from remains of the omphalomesenteric duct. As to the ultimate factors which cause this differentiation, however, nothing can be stated at present.

The finding of this gastric mucosa explains well the reasons for the finding of acid secretion with digestion at the umbilicus in cases of umbilical polyps and fistulæ as reported in the literature, although cases in which gastric mucosa occurred at the umbilicus had been reported before. Again, there is a good embryological basis for understanding certain adenomatous tumors and growths of an intestinal glandular nature occurring at the umbilicus, in obliterated intra-abdominal umbilical cords, and in Meckel's diverticulum. In fact, in the case reported it is interesting to speculate as to the condition for which the patient had been operated upon several years previously. It seems probable that there was at that time a perforation at the tip of Meckel's diverticulum, though none was found at the operation. As a consequence of this an abdominal abscess formed which was simply drained and which healed with the formation of adhesions between the tip of Meckel's diverticulum and the anterior abdominal wall. It is interesting to think also that this perforation at the tip of Meckel's diverticulum might well have been a perforative gastric ulcer, for so far as the structure of the mucosa went the author was certainly dealing with the fundus type of mucosa membrane. This perforation evidently healed subsequently. The case further illustrates the desirability of examining carefully all cases of Meckel's diverticulum for the possibility of the occurrence of aberrant glandular tissues in the mucosa, because of the importance of these structures in embryology, pathology, and certain surgical conditions. G. E. BEILBY.

Kirmisson: Surgery in the Treatment of Infants: Appendicitis (Chirurgie infantile, l'appendicite). *Rev. gén. de clin. et de thérap.*, 1919, xxxiii, 369.

Owing to the great possibility of diagnostic error in cases of acute appendicitis in infants and on account of the frequent involvement of the intestine Kirmisson emphasizes:

1. The absolute necessity of methodically exploring the abdomen with the patient under the influence of an anæsthetic in order to discover the location of the appendix by palpation accurately. It may then be determined whether it is best to make the incision on the sheath of the rectus, toward the iliac fossa, or in the lumbar region.

2. The necessity for resecting the omentum extensively as often it has become a purulent sponge infiltrated with bacteria and should not be returned to the abdomen to act as a focus of infection. When, however, the condition is of the type known as a "cold appendicitis" and there are only slight omental adhesions such resection is not necessary.

3. The necessity for always exploring the lower pelvis for purulent collections and immediately drying the pelvic cavity. Kirmisson uses a special drain of his own design. He does not recommend prolonged drainage or very voluminous compressive drains.

The administration of purgatives should be avoided. Of great value in these cases is the use of the Fowler position and the Murphy intrarectal drip. In addition, physiologic salt solution may be injected subcutaneously and injections of camphorated oil given when the pulse is weak. Intestinal stasis may be fought with pituitrin. W. A. BRENNAN.

Mayo, W. J.: Some of the Old Hospitals of London, with Special Reference to the Treatment of Fistula in Ano and Hæmorrhoids. *Minnesota Med.*, 1919, ii, 197.

The writer calls attention to the scientific advantages offered by Great Britain to English-speaking surgeons and pays a tribute to the honesty and sound sense of the British surgeon. During the pleasant rambles that he had around the old city of London he learned the why and wherefore of many of her places of historic interest and the origin of certain descriptive names such, for example, as "bedlam," which was derived from the St. Bethlehem Hospital for the insane founded in 1297.

The Royal College of Surgeons of England, established in 1800, is not so old as the Royal College of Surgeons of Edinburgh which was founded in 1505 and signifies its origin by grant from Henry VIII by using the flat cap worn by him as part of its academic uniform. The marvelous specimens numbered in black and put up by John Hunter's own hands have been exhibited in the Museum of the Royal College of Surgeons of London for more than a hundred years.

For the treatment of special diseases there are many lesser hospitals in London which are not so old as those already named, yet much older than any other hospitals in the world. Examples of these are the Good Samaritan and the Women's Hospitals which have their counterparts in the various women's hospitals in this country. St. Peter's Hospital, devoted to the treatment of stone in the urinary bladder and other urinary conditions, has long been the center of

the urologic school of surgeons of Great Britain. It is there that Freyer and Thomas Walker work today. The new Brady Hospital in Baltimore under the able leadership of Hugh H. Young is the American expression of the same idea.

Unique and among the most interesting of these pioneer special hospitals is St. Mark's Hospital which was founded in 1835 and built for the treatment of fistulæ and other diseases of the rectum exclusively. It was here that the great Allinghams, father and son, worked and practised the ligature operation for hæmorrhoids. Fistula in ano has been well treated at St. Mark's Hospital for more than forty years.

Some time ago the writer was so fortunate as to become acquainted by personal observation with the methods introduced in St. Mark's Hospital for the repair of fistula in ano, and as a result is able to look back on a most satisfactory experience in the treatment of this annoying variety of infirmity. Goodsall pointed out that if a line were drawn transversely through the middle of the anus, all the fistulæ lying anterior to it would pass directly from the external skin opening to the internal opening inside the anal canal, and that all the fistulæ posterior to it would have their internal opening in the posterior midline of the anal canal, no matter where or how many lateral openings—the so-called horsehoe fistulæ—are present. In the anterior fistulæ, therefore, the external opening will be found opposite the internal opening. An anterior horseshoe fistula, as Edwards remarks, is practically unknown. The cause of the curved or angular shape of the posterior fistulæ, the external openings of which are lateral and lead by a crooked passage to the posterior internal opening, is the arrangement of the coccygeal ligaments and muscles which protect the external tissues lying in the posterior midline and direct the pus laterally; in this way the so-called horseshoe tracts and openings are formed.

The treatment of the posterior fistula, which is the most troublesome, consists of carefully following the one or more external openings to the posterior midline where the fistulous tract leading to the internal opening just above the external sphincter will be readily exposed. This is then split through and the incisions made by following the lateral fistulous tract are joined. If after the use of the curet the fistulous tract contains much thick scar tissue, the posterior wall of the tract is split to let the blood supply come through.

At King's College Hospital in 1862 Henry Smith originated the clamp and cautery treatment for hæmorrhoids, a method used in the Mayo Clinic in hundreds of suitable cases with the utmost satisfaction. It is more than twenty years since the writer learned to do the clamp and cautery operation properly by reading in the London *Lancet* an acrimonious discussion carried on between Allingham and Smith. The pile should not be trimmed away with the scissors because if the eschar pulls apart, the cut artery, which is most resistant, will bleed as Allingham stated; according to Smith, the pile should be slowly converted into an aseptic eschar protected by the desiccated tissues, and the germs on the surface of the hæmorrhoid destroyed at the same time. The pile tissue should be caught in three places, a half inch of sound mucous tissue being left between each group of vessels destroyed by the cautery so that no stricture will follow.

LIVER, PANCREAS, AND SPLEEN

Einhorn, M.: Jaundice. *Med. Rec.*, 1919, xcv, 1043.

The three types of jaundice which the author describes are as follows: (1) the obstructive type in which one or more of the canals draining the liver has become closed; (2) the hepatic type in which the liver cells which manufacture the bile lose the power of sending it through the biliary canals; and (3) the hæmolytic type in which it is believed that the bile is manufactured in the blood itself, the liver having very little or nothing to do with it.

The symptoms usually present and which are due to the bile itself are slowness of the pulse, drowsiness, lack of mental concentration, lack of energy, and quite often an itching sensation. Each case also has the objective symptoms which are due to the original disease. In many instances there is no pain at all; in others the patient has severe pain, chills, and fever, and is very sick.

In the differential diagnosis the obstructive types are the first to be considered. Catarrhal jaundice is the type most frequently encountered. In this condition the common duct is obstructed by the formation of a mucus plug and there are mild digestive disturbances such as lack of appetite, nausea, constipation, and perhaps vomiting. The patient suffers in this way for a few days or a week, and then all of a sudden turns yellow. However, there is no pain. The yellow color then increases, the urine becomes dark brown, and on examination is found to contain bile. The stools are clay colored. Examination of the duodenal contents will show some bile and ordinarily in the first twelve days of the disease there is a quantity of mucus.

The other type of jaundice which also appears in the acute form is caused by the obstruction of the canals of the biliary system by stones. Characteristic of this condition are severe pains preceding the attack which come on suddenly and are very acute; in some cases they are radiating, extending to the center and then to the right. When the common duct is not involved and stones are present only in the gall-bladder, the author believes the pain is brought on by spasm.

In some cases of duodenal ulcer in which there are no stones at all, the pain is characteristic of gall-stones and jaundice; this is thought to be due to a distinct spasm of one of the sphincters of the common duct. In such instances repeated examinations of the duodenal and gastric contents is necessary for the diagnosis.

The author mentions the case of one patient who was treated at Carlsbad for several years for gall-stones. He also had a typical attack of severe pain

and slight jaundice, elevation of temperature, and vomiting. Examination of the duodenal contents showed the presence of clear bile, pancreatic secretions, and blood. At operation no stones were found and the gall-bladder was normal, but there was pyloric spasm on account of the presence of duodenal ulcer. Undoubtedly at times this had caused a spasm of the papilla of Vater which had in turn resulted in the jaundice.

The author next considers the jaundice which is of a protractive character. While stones may be present in this condition also, other affections may be the cause of the yellow color. Protractive jaundice without pain at all is due usually to the condition which is termed "biliary cirrhosis of the liver." If, however, there is pain with no distinct periods of interruption, the condition is of the malignant type. In the malignant type the jaundice is extreme in spite of the fact that a great deal of bile may be found in the duodenum and in the stools. One case is mentioned in which there was considerable suffering, slight loss of weight, and extreme jaundice. The gastric contents showed the absence of hydrochloric acid and the presence of blood and lactic acid. The duodenal contents showed clear bile, but the pancreatic juice revealed the absence of trypsin ferment. The diagnosis of cancer of the stomach involving the pancreas and liver was confirmed at autopsy.

In the hæmolytic type the urine usually contains no biliary pigments, but the stool is colored and there is jaundice. Frequently the spleen is enlarged and the red blood corpuscles are markedly fragile.

A few points as to the medical treatment of jaundice are mentioned. In all acute forms the patient should have plenty of water, perhaps Carlsbad salts, and a light diet. If there is severe pain, hypodermics of morphine should be given until the attack subsides. If the patient has stones with repeated attacks, operative interference is necessary. In coming to a decision the X-ray findings, temperature, leucocyte count, and the patient's condition must be considered.

In the stone form of jaundice which has continued for from five to six weeks without abatement, a diagnosis of stone in the common duct is justifiable and these cases should be operated upon.

In cases of protractive jaundice due to malignancy the patient should be operated upon even if only to make him more comfortable. The gall-bladder may be attached to the stomach or the intestine so that there is a free flow of bile.

Little can be accomplished surgically in biliary cirrhosis. In the author's experience, small doses of calomel followed by iodides have been very satisfactory. This treatment may not succeed in all cases, but everything should be tried before giving up, especially when nothing can be done surgically.

In the hæmolytic type in which the spleen is enlarged, splenectomy is recommended. The author mentions one case in which he used radium with satisfactory results. E. A. PRINTY.

Wollstein, M., and Mixsell, H. R.: Report of a Case of Hepatoma in an Infant. *Arch. Pediat.*, 1919, xxxvi, 268.

This article gives the history and findings in the case of a baby who was first seen when it was 4 months of age. The child was brought to the dispensary for dietary instructions and because of a lump about the size of a peanut under the right lower rib. This lump was first noticed when the child was 3 months old. The family history was negative except that the maternal grandmother had diabetes. The child's past history was also negative.

At the time of examination the patient was poorly nourished and sallow. At the bases of both lungs were a few scattered subcrepitant rales. There was no adenitis. A fine generalized maculopapular rash was present. There was no distention, rigidity, or tenderness over the abdomen. Both liver and spleen were palpable below the costal margins. At the lower border of the liver a nodule about 2 by 3 centimeters in diameter, smooth and hard, was palpated. The reflexes were normal and there were no deformities.

The baby was not seen again for six weeks. It was then brought in for double bronchopneumonia. At this time a large mass, taken to be the liver, was felt in the abdomen. Its lower border extended into the right iliac fossa, and small, hard, elastic, smooth nodules could be felt upon its surface. The spleen was palpable at the costal margin. There was no ascites. The Wassermann and von Pirquet reactions of both the child and its parents were negative. A diagnosis of congenital sarcoma of the liver, probably primary, was made.

The recovery from the bronchopneumonia was uneventful, but about three months later the child was brought back in an extremely emaciated condition. The abdomen measured 41 centimeters at the xiphoid and 35 centimeters at the umbilicus. The ribs were pushed outward and the diaphragm upward. The abdomen was greatly distended and the superficial veins were prominent. The mass was larger than at the time of the previous examination. In the left groin were four bluish nodules attached to the skin, the largest ½ centimeter in diameter. Death occurred in a few days.

An autopsy was performed five hours after death. Acute bronchopneumonia was present in about one-half of the left lower lobe and the right lung. The upper lobe on the outer surface just below the apex showed a hard white nodule 3 millimeters in diameter, evidently a metastasis. The abdomen contained, from 20 to 30 cubic centimeters of thin fluid blood in the pelvis. The organs were somewhat displaced, due to the enlarged liver. The spleen was slightly enlarged but exhibited no nodules. The heart, adrenals, and kidneys were negative. The liver weighed 860 grams and measured 18 centimeters in length and 17 centimeters in width. The upper surface was nodular, pale, and fatty. The anterior border was rounded and thickened by the growth

which showed through the capsule as small, round, greenish masses with dilated vessels between the nodules. The posterior border was nodular and entirely made up of neoplasm. The left lobe was filled with nodules and the lower surface was almost entirely made up of new growth. The main mass occupied the anterior half of the liver. The growth was soft and bile stained and contained many small hæmorrhagic and softened areas. In the posterior portion the nodules were less bile stained, more hæmorrhagic, and in some places white in color. Between the nodules and liver substance there was no capsule but a capsule was simulated by a compressed mass of liver tissue. The anatomical diagnosis was hepatoma, pulmonary metastasis, subcutaneous inflammatory nodules. Microscopically the growth was a primary epithelial tumor of liver cells. This condition is very rare in children and is either adenomatous or carcinomatous in type. Only a few cases have been recorded.

I. W. BACH.

Robin, A.: Hydration and the Soluble and Insoluble Residues in Cancer of the Liver; a New Conception of the Genesis of Cancer (L'hydratation, le résidue soluble et le résidu insoluble dans le cancer du foie. Une nouvelle conception sur la genèse du cancer). *Bull. Acad. de méd.*, Par., 1919, lxxxi, 699.

Robin finds that cancerous liver tissue contains a quantity of water higher than that of normal liver tissue under the same conditions. The hydration reaches its maximum in the most cancerous parts and as a rule amounts to 14 per cent. In the healthier parts it amounts to about 10.3 per cent. With the development of the growth it increases.

This hydration is not characteristic of cancer alone as it is observed also in the liver of the consumptive and in tuberculous lungs. In the acute form of phthisis, however, the water content of the least involved regions of the lung falls considerably below the normal while in the cancerous liver it is above that of the normal liver in regions which are relatively healthy.

Hydration is a phenomenon common to all rapidly growing tissues and is related to their histogenetic activity. Like all growing tissue cancer possesses the power to construct with a given quantity of solid material more histologic substance than other tissue. Indirect proof of this is the fact that the amount of water tends to diminish in fatty tissues (the alcoholic fatty liver, for example) and in such tissues histogenetic activity is decreased.

Hydration of cancerous tissues involves a decrease in the amount of both organic and inorganic matter which is greatest in the most extensively involved areas. In the tuberculous lung the areas least involved by the disease contain more organic and inorganic material than the normal lung.

The process might be considered as due to the effect of a ferment which splits the proteins of the organ in the parts involved by the cancer and by a reverse action collects electively in some cells the amino acids set free to effect a rapid growth and an ungoverned multiplication.

The author's conclusions are based upon the analysis of cancerous livers, the livers of 5 persons who were affected with tuberculosis, including cases of acute and rapid development, the liver of an alcoholic, and the liver of a patient who died of cerebral hæmorrhage. Two normal livers were studied as controls. The analytical results are given in several tables.

W. A. BRENNAN.

MISCELLANEOUS

Alexander, M. E.: Surface Temperature in the Diagnosis of Surgical Abdominal Conditions. *N. York M. J.*, 1919, cix, 1077.

The author ascertained the surface temperature of the abdomens of 50 normal persons and of 250 persons who had diseases of the abdominal organs. In the latter cases the determinations were made at the point of maximum tenderness or rigidity and compared with the opposite side. His conclusions are as follows:

1. In surgical inflammations of the abdominal viscera (except the kidneys) there is no elevation of temperature of the skin overlying them.

2. In unilateral inflammation of the kidney there is frequently a localized elevation of surface temperature.

3. In 74 per cent of cases of unilateral suppuration of the kidney the surface temperature of the affected side was one degree or more higher than on the unaffected side.

4. In advanced tuberculosis of the kidney the surface temperature may be lower than on the unaffected side.

Miller, L. I.: Mesenteric Thrombosis, with a Review of the Literature. *Colorado Med.*, 1919, xvi, 148.

Of 214 cases reported in the literature only 197 were accurately described as being arterial or venous varieties. In the cases in which this was stated there was no essential difference in the course.

The condition may be acute or chronic, the latter being characterized at times by relapses and remissions.

Following a discussion of the etiology, which is obscure, and a description of the pathology, the author gives a résumé of the symptoms.

The onset is sudden and characterized by a colicky pain which in 51 per cent of the cases is generalized. In 67 per cent this is accompanied by generalized abdominal tenderness. Nausea and vomiting soon follow, the vomitus varying from stomach contents to biliary, fæcal, or blood-containing material. There may be constipation or diarrhœa. In the latter cases the stools are bloody. The symptoms may be those of a severe type of intestinal obstruction.

In one case seen by the author there was a sudden onset of generalized abdominal pain, nausea, vomiting, and severe constipation. The patient entered the hospital in shock, with tympanitis on the right side and dullness on the left. An enema partly returned contained dark tarry blood. The white-cell count was 28,000 and the red-cell count 5½ million. The hæmoglobin was 90 per cent. Operation revealed extensive and advanced involvement of the descending colon. K. L. VEHE.

SURGERY OF THE EXTREMITIES

DISEASES OF BONES, JOINTS, MUSCLES, TENDONS. GENERAL CONDITIONS COMMONLY FOUND IN THE EXTREMITIES

Baetjer, F. H.: Osteomyelitis. *Am. J. Roentgenol.*, 1919, vi, 259.

In discussing the roentgen diagnosis of osteomyelitis, the author describes the pictures which may be obtained depending on the portion first involved, the character of the destructive process, the path of extension, the character and location of new bone proliferation, and the condition of the cortex.

Attention is called to the fact that a hæmatogenous infection usually affects the medulla first, and the cortex and periosteum are not involved early.

When the periosteum is first involved the changes are confined to the periosteum and cortex, and there is resulting osteitis and periosteitis.

When a joint is primarily involved the involvement occurs first in the articular surface. Later it spreads to the head of the bone. The medullary canal does not become attacked until later, if at all.

In compound fractures all of the bone structure may become involved simultaneously.

While osteomyelitis does not give us a constant picture, the author believes that if we would keep clearly in mind the principles of bone infection we would recognize it when it is present.

Two changes take place in osteomyelitis: destruction and reproduction of bone. The more virulent the infection the slower the beginning of bone reproduction. Early in a virulent infection the haversian canals may be filled with pus, but if no destruction of bone has taken place there will be no evidence of it on the roentgen plate.

The earliest changes which can be demonstrated on the plate are vacuolated areas in the medulla which appear as areas of lessened density and are formed by regions of bone destruction with normal bone between them in the cortex. This finding alone is sufficient to differentiate osteomyelitis from malignancy, as tumors spread in all directions leaving no normal areas. The infection finally penetrates the cortex in one or more places, leaving normal cortex in between.

Bone proliferation begins at the point where infection starts. The periosteal bone is deposited on the outside, a fact which differentiates osteomyelitis from tumors of the cortex which expand the cortex.

In acute osteomyelitis destruction predominates and there is very little bone proliferation. In the chronic form the reverse is found.

Luetic osteomyelitis gives a picture identical with that of pyogenic osteomyelitis but which can be readily differentiated as in the former more than one bone is usually affected. As a rule the bone involvement is widespread but the clinical symptoms are extremely mild. In cases of pyogenic osteomyelitis the reverse is true.

The author urges that a careful history of all operative cases be obtained in order that we may be correctly informed as to whether the areas of destruction are due to bone disease or the surgeon's curette.

The presence or absence of sequestra or involucrum is easily discovered from the plate and frequently determines the character of the operation to be carried out. W. A. EVANS.

FRACTURES AND DISLOCATIONS

Hicks, C. F.: The Operative Treatment of Fractures. *W. Virginia M. J.*, 1919, xiii, 401.

Fractures cause more trouble to the conscientious surgeon than any other of the many conditions which he is called upon to treat. During the past several years, however, the treatment of fractures by the general surgeon has not received the attention it deserves. It is unnecessary to demonstrate that the present methods are unsatisfactory. In the treatment the points of greatest interest to the patient and necessarily of most concern to us are, first, to obtain good union; second, to decrease the period of disability; third, to prevent shortening as much as possible; and fourth, to obtain pronation and supination unhindered, with all joint functions preserved and followed by a good anatomical result.

The methods of treatment are the non-operative and the operative. In regard to non-operative treatment, some believe and teach that traction and countertraction are efficient means for securing perfect adjustment of fractured bones and always a sufficiently accurate adjustment to give a functionally useful limb. They contend that an exact anatomical result is not essential for a perfect functional result. Others maintain, however, that a retained anatomically perfect reduction is necessary to obtain a functionally useful limb, and this can be secured only by the open method with direct fixation of the fragments by plates or Parkham's bands. While it is true that we are not having more non-unions than formerly, this is due to the fact that we are operating on ununited fractures much

earlier as it is now possible to make an accurate diagnosis with the aid of the X-ray.

Every fracture is a hospital case, for the X-ray is the only means we have to check up the results, and the proper handling of the average case requires study and great care. The majority of fractures of the long bones should be treated by the operative method. A fair trial of the operative method under the most careful aseptic treatment will justify the following conclusions:

1. The X-ray picture will show that in some cases of fractured femur, humerus, tibia, and both bones of the forearm at the middle or upper third it is a physical impossibility to secure perfect adjustment after repeated attempts at reduction.

2. Some of these cases can be treated by the open method by which the proper reduction of fragments may be effected and retained without the use of any foreign body.

3. The danger of a foreign body placed on a fracture has been exaggerated.

4. For some fractures the Lane plate is the most simple and efficient aid in fixation, especially if the picture shows a wide separation of fragments and interposition of tissue, as in the lower fourth of the femur.

5. Parkham's band applied to a fracture of the shaft of the femur which the radiogram shows to be oblique or spiral will bring about immediate immobilization. It requires only a small incision and causes little mutilation of the tissues.

6. Temporary internal fixation insures practically anatomical reduction, and as it is a great aid in the dressing of compound fractures, greatly simplifies the after-treatment.

7. The early removal of a band or plate after repair of a fracture will prevent osteitis.

8. The early application of a band or plate will prevent a later operation by autogenous bone graft.

9. The X-ray has demonstrated that the watchful waiting of non-operative treatment is unsatisfactory and has shaken our confidence in manual reduction maintained by splints, extension, and suspension. It therefore will force us to use more accurate methods. P. H. KREUSCHER.

Carlsson, P.: Concerning the Treatment of Fractures of the Femur (Ueber die Behandlung von Bruechen am Oberschenkelschaft). *Nord. med. Ark.*, 1919, li, Ark. f. Kir., 573.

The author reports all the cases of fracture of the shaft of the femur which came to treatment at his clinic between the years 1910 and 1917. In 1909 X-ray examination of all fractures was inaugurated and the treatment was more or less controlled by it.

One hundred and fifty-eight of the patients were males and 47 females. Fifty-five per cent were children under 10 years of age. The type of fracture in these was usually spiral or transverse. The spiral fracture was more common in those over 1 year of age but in those who were younger almost all of the fractures were directly transverse. The second large group were those occurring in young men and men up to the age of 50 years. As a rule these were due to industrial accidents and were either simple transverse, short oblique, or comminuted fractures. The localization was somewhat variable, but was usually in the shaft and more rarely near the ends. Spiral fractures were rare in this group; more common was the bending fracture due to an indirect force. Few women were included in this group. The spiral fracture was again found in those more than 50 years old but then occurred almost exclusively in women and usually in the lower end of the femur, less frequently in the upper end, and rarely in the center. The cause in such cases was more or less indirect force, frequently insignificant. The conclusion is therefore apparent that the bones of women at this age are more brittle.

Five fractures were compound but all of these were treated aseptically and behaved like ordinary closed fractures without any complication. In two cases interposition of soft parts occurred, necessitating operative interference on account of non-union.

The author reviews all the current methods of treatment employed by him for the various groups of fractures as follows:

1. Placement and immobilization of the limb to keep the ends of the bone in position by the position of the limb.

2. Reposition and immobilization of neighboring joints by means of splints or a plaster cast.

3. Open treatment by operative means to reduce the fracture and immobilization to retain the position.

4. Functional treatment to retain the function of the injured limb irrespective of the anatomical defect which might result.

5. Extension treatment: (1) indirect extension by means of adhesive plaster or some similar adhering substance, and (2) direct extension by Steinman's nail extension method or Schmerz's ice tongue or clamp method.

Only 2 patients were treated by the first method; two old women of 79 and 91 years respectively. In both cases the leg was placed between two sacks of sand and slight extension applied with the patient in bed until union was obtained. The results were unsuccessful.

Only the new-born and very small children were treated by reposition and splints or body fixation. With the latter method the limb was flexed directly upon the abdomen and held in place with bandages according to a method similar to that used by obstetricians. The splints used were splints made of ordinary wood or the ordinary Volkman wire splint. Only 7 cases were treated by this method, 6 of these patients being children under 3 years of age. In 2 cases the results were perfect. In 3 there was a slight angulation of the bones at the site of fracture and in 1 a shortening and lateral displacement. One patient, a woman of 71 years of age, had a fracture of the lower third of the femur without any dislocation. After treatment with a Volkman splint for

forty-three days a good result was obtained as shown by the examination five and one-half years later.

REPOSITION AND PLASTER CASTS

Thirty-one cases were treated with reposition and plaster of Paris casts. Of these 19 were treated exclusively by this method. The age of the patients varied between 5 and 78 years. There were 8 transverse, 7 oblique, and 4 comminuted fractures. The average length of time the cast was left on was five and one-half weeks. In the majority of cases the dislocation was rather marked and in only 4 out of 19 was there no shortening. All the other patients had shortening of the limb amounting to from 1 to 8 centimeters. An ideal result was obtained in only one case, and in this instance the dislocation was only trivial.

Summed up the results were as follows: Shortening, which was present in 16 cases at the time of fracture, was corrected entirely in 6, decreased in 7, and unchanged in 3. Extensive dislocatio ad catus which was present in 19 cases was entirely corrected by reposition in only 1 case. In another case it was partially corrected and in the remaining 17 was not influenced at all. In 1 instance it was even aggravated. Angulation which was present in 12 cases was corrected in 7, improved in 1, and not influenced in 4. In 18 cases in which the author was able to estimate the retentive ability of a plaster cast he found only 5 in which the correction obtained at reposition was retained by the cast. In the remaining 13 the condition became worse after the cast was applied and in 8 of these the position of the fragments became worse than before the reposition. In 10 cases the function at the time the patient was discharged was more or less limited. Of 14 patients, examined from one and one-half to seven years later by the X-ray, only 2 were functionally and anatomically normal and both of these were children, 3 and 5 years old respectively. The remaining 12 patients had permanent dislocations; all had shortening from 2 to 5 centimeters, the average shortening being 3½ centimeters. In addition there was definite deformity in 10 cases. Normal function with abnormal anatomical results was obtained in only 2 of these 12 cases, and both of the patients were 13-year-old boys. Of 14 patients re-examined, therefore, 10 showed more or less functional disability, such as pain, muscular weakness, atrophy, and joint stiffness, but all were above 13 years of age.

OPEN OPERATION

The number of cases treated by open operation was 19 and the ages of the patients varied from 7 to 65 years. Eleven of the fractures were transverse, 5 oblique, and 3 comminuted. Three were in the upper third of the femur, 11 in the shaft proper, and 5 at the lower end. Two were compound fractures. In only 2 cases was the operative treatment undertaken primarily; in the others it was employed as a secondary method following failures by other methods. The time of operation varied from three days to seventy-four days after injury. Six operations were performed within ten days. In 1 case the treatment was an absolute failure and in another death occurred before reduction could be controlled. In only 7 was there an exact reposition of fragments. In 2 cases a dislodged fragment was apparent and in 9 there was more or less angulation. Definite shortening was found in 2 cases and lateral displacement also in 2. In 2 others resection of the end of the fragments had to be done to maintain reposition. Later re-examination showed similar findings.

The end-results were perfect in 7 cases. In the others there was functional disability as before. In 6 there was muscular atrophy or weakness, in 7 stiffness of the part, and in 1 severe pain. The average age of the patients in whom a perfect result was obtained was only 10 years whereas that of the others was 44 years. The danger in this group, of course, is infection which occurred in 3 cases out of 20 and resulted in 2 deaths.

INDIRECT EXTENSION AND VERTICAL SUSPENSION METHOD

Ninety-nine cases were treated by indirect extension and vertical suspension. The ages of the patients varied from 6 months to 11 years, the average being 4½ years. Forty-seven of the fractures were spiral, 35 transverse, 3 oblique, and 3 comminuted. Two of the fractures were in the upper end of the femur and all others in the shaft proper. The duration of treatment varied from eight to forty-one days, the average being twenty-one and one-half days. In 12 cases this method had no effect upon the dislocation and other measures were necessary. The immediate results of the treatment in other cases were as follows: shortening was present in 41 cases but absent in 44. In 3 cases it was more than 2 centimeters, in 13 under 1 centimeter, and in the others from 1 to 2 centimeters. Angulation and lateral displacement were present at the end of the treatment in 42 cases. In 21 of these there was no shortening.

In determining the end-results of the treatment it was found that in 42 cases examined by the author personally there was shortening in only 3, the amounts being 1, 1½, and 3 centimeters, respectively. In 11 of these 42 cases X-ray pictures showed some degree of displacement. Of 33 patients who reported by letter, 32 stated that they were perfectly restored and that there was no difference between the two limbs. Bending was present in only 1 case. The function was normal in all of the 75 cases. The danger of this method consists in the possibility of adhesive-plaster decubitus which occurred in 4 cases.

INDIRECT EXTENSION METHOD WITH HORIZONTAL POSITION OF LIMB

By the method of indirect extension with horizontal position of the limb 39 cases were treated. Fourteen of these patients were less than 14 years of age, 19 between 15 and 50, and 6 over 50 years. Fourteen of the fractures were transverse, 17 ob-

lique, 1 spiral, and 7 comminuted fractures. Six occurred at the upper end of the femur, 26 in the shaft proper, and 6 at the lower end. In all of the cases except one the treatment was begun within three days after the accident. The average duration of the treatment was thirty-five days. In 9 cases all the displacement was corrrected; in 4 it remained the same; in 6 it became worse; and in 16 it was more or less improved. In regard to the variety of the displacement the author states that shortening was corrected completely in 13 cases, diminished in 10, unchanged in 3, and increased in 5. Lateral displacement was corrected in 3, improved in 3, unchanged in 20, and increased in 3. Angulation was corrected in 9 cases, diminished in 4, unchanged in 3, and increased in 10 cases. Hospitalization varied from forty-two to two hundred and fifty-three days, the average being seventy-eight and five-tenths days.

Late results: Of 20 patients examined by the author personally, 10 showed no shortening and the remainder, shortening of from 1 to 5 centimeters. In 9 cases the displacement was the cause of the shortening. The functional result was apparently normal in 17 cases. In 3 there was pain over the site of the fracture, in 6 joint stiffness, in 5 muscular atrophy and weakness, and in 7 pain in the entire limb.

DIRECT EXTENSION

Twenty-nine cases were treated by direct extension, 21 with the Steinman nail extension method; and 8 with the Schmerz clamp or ice tongue method. In 24 cases the nail or clamp was applied at the condyles of the femur, in 4 at the head of the tibia, and in 1 at the malleoli. General anæsthesia was employed for the nail extension method but local anæsthesia was sufficient for the clamp method. The nail was driven in without preliminary skin incision, whereas in the clamp method the skin, soft tissues, and periosteum were first incised. Disinfection was accomplished with tincture of iodine. In 8 cases the semiflexion principle was adopted, flexing the knee on the thigh to an angle of about 135 degrees. In the remainder of the cases the thigh was flexed on the abdomen but the leg was extended at the knee-joint. In the semiflexion method the leg was held in a hammock-like contrivance supported directly from the bed.

The ages of the patients varied from 5½ to 79 years. Nine were less than 15 years old, 16 between 15 and 50, and 4 more than 50. There were 17 transverse fractures, 9 oblique and spiral fractures, and 3 comminuted fractures. Twenty-four were directly in the shaft, 3 at the upper end, and 2 at the lower end.

In only 8 of these cases was the method employed primarily. Nineteen had been treated with the indirect extension method previously and 2 had been treated elsewhere. The duration of the treatment varied from nine to thirty-six days, averaging twenty-three days. Shortening was entirely overcome in 24 cases, and in 9 of these a transient hyperextension was observed. In the remainder the shortening was overcome from 8 centimeters to 1 centimeter in one case and from 5 to 3 centimeters in another case. In the others no effect on the shortening was obtained. Lateral displacement was entirely corrected in 2 cases and improved in 13. In 12 there was no effect exerted upon it by the method. In 7 cases aggravation of the position of the fragments was noticed. Hospitalization varied from forty-two to one hundred and forty-one days, averaging sixty-four and one-half days.

In regard to the late results, the author states that of 24 patients who were heard from, 4 reported perfect recovery. Of 20 who were personally examined by the author 9 showed no shortening, 4 showed lengthening of the limb, and the remaining 8 had shortening varying from 1½ to 7 centimeters. In only 3 was there no angulation or lateral displacement. The period of disability varied in 14 cases between two and eight months, averaging four and four-tenths months.

The principal danger of the method is of course, infection. Of 29 patients, 22 progressed without any irritation where the extension apparatus was applied. In 2 cases a doubtful infection was observed, in 1 a definite infection, and in another an infection without any bone involvement. In 2 cases there was a definite osteitis in the neighborhood of the foreign body and the nail and clamp had to be removed. No other complications occurred.

REVIEW OF METHODS

Considering first the group of patients whose ages were below 14 years, we find that the direct extension method as well as the operative method rendered a perfect result in all cases treated by these methods and re-examined. The indirect extension method gave 2 imperfect results among 14. The least favorable results were obtained with the plaster of Paris cast, only 2 out of 5 being perfect.

The most important group of course is the group of patients whose ages were between 15 and 50 years. In this the plaster cast method again rendered the worst result, all patients having a permanent displacement and some disturbance of function. The operative method and the indirect extension method gave about similar results, only about one-sixth to one-seventh of the cases respectively having a perfect result and about one-half having malposition and functional disturbances. The direct extension method shows a definite superiority over these, the results being perfect in nearly one-half of the cases and only two-sevenths of the patients having malpositions and functional disturbances.

In the aged none of the methods rendered a perfect result, but the permanent extension method showed slight superiority.

The author therefore concludes that the plaster of Paris method gives the worst results, 10 of the cases so treated belonging to the group with the worst results. The operative and the indirect extension method are nearly equal, about one-half of

all the cases so treated having perfect results. The indirect extension method is somewhat superior, however, in that only one-quarter of the cases so treated belonged in the group of worst results (malposition and disturbance of function) whereas of the cases treated by the operative method nearly one-half belonged to this group. The direct extension method is decidedly superior, 14 of 24 being perfect results and only 5 belonging in the group of worst results.

REQUIREMENTS OF THE METHOD CHOSEN

1. To be effective the method must permit correction of the displacement and maintenance of the bone in the correct position until consolidation has set in.

2. It must permit permanent extension of the limb in the semiflexed position.

3. It must permit motion in the joints, especially in the knee-joint, almost from the beginning of the treatment.

Therefore reposition with a plaster of Paris cast must not be employed as a permanent method of treatment. While for transportation purposes this method has some value as shown in war surgery, for the actual treatment of fractures of the shaft of the femur in the hospital it should not be employed.

Position with the application of a splint can be employed only when there is no displacement and when it is unlikely to occur. In fractures of the femur in the new-born the use of the body splint is perhaps the best method.

The operative method must be considered in a different light from the others. By the operative method of course is meant plates, reposition of exposed fracture ends, wiring, bone inserts, bone pegs, etc. The special indication is the interposition of soft parts between the fracture ends. After reposition extension must be employed as usual and the danger of the method is thereby much diminished.

Permanent extension is the normal method but the author is still undecided whether to advise the direct or the indirect method. Semiflexion of the knee-joint is highly desirable and is easily obtained with the direct method whereas it is difficult to obtain with the indirect method. In fractures in children the indirect method is undoubtedly effective as is shown by the author's material. That the late results of these cases are so good, however, is due not to the superiority of the method but rather to the better restitutional ability of the young. For infants and very small children the Schede vertical suspension method is without doubt the best method as it permits cleansing the child very easily. The age limit for its use is placed at about 7. Up to the age of 15 Bucks extension with semiflexion of the limb is perhaps better than for older persons. If indicated, direct extension should be used. The author is of the opinion that elderly persons stand the direct extension especially well.

OUTLINE OF TREATMENT

The treatment must be individualized and based upon the patient's age, the primary displacement, muscular development, and general condition.

The aim of the method should be a perfect anatomical result as well as a perfect functional result. The former must not be obtained at the expense of the latter. The following rules are advised:

1. Every fracture of the femur should be a hospital case.

2. The treatment should be instituted as soon as possible after the injury and after a preliminary X-ray examination. The case should not be left over night nor should the disappearance of the swelling be awaited.

3. The treatment must aim to correct the displacement during the first few days. If the method chosen does not accomplish this a more effective method must be substituted.

4. The reposition should be accomplished principally by permanent extension with the limb in the semiflexed position. A preliminary forced reposition is unnecessary and if any time has elapsed between the injury and the time treatment is begun it is dangerous on account of the possibility of a thrombus.

5. Slight passive motions in the knee-joint should be practiced as early as the day after the application of extension. Slight active motions may be tried a week later. The removal of the extension apparatus should be followed by massage.

6. In the cases of adults weight-bearing should not be permitted sooner than ten weeks after the injury. Even in the cases of children care must be exercised in permitting weight-bearing.

7. The patient should remain in the hospital until all function is normal.

TECHNIQUE OF THE DIRECT EXTENSION METHOD

The greatest danger is infection. Primary infection is doubtless rare. It probably creeps from the skin along the foreign body, either nail or clamp, and is promoted by the reaction around the foreign body. It is therefore evident that the smaller the foreign body the less the danger. For this reason the author prefers the clamp or ice tongue. Strict asepsis is essential at the time of application. The daily use of tincture of iodine around the site of application of the extension apparatus is advised. Early removal of the foreign body is of primary importance. As soon as the displacement is corrected and considered firm enough the clamp or nail should be removed. It is better to replace it in a few cases than run the risk of infection by leaving it too long. The site of application also deserves some consideration. The condyle of the femur, of course, is the best and logical place. To apply extension at the calcaneous interferes with semiflexion. Christen objected theoretically to the use of the condyles because most of the muscles the pull of which we aim to overcome by traction are inserted into the head of the tibia and therefore he believed the latter would be the

logical place to apply the extension. By doing so, however, pressure occurs upon the joint surface, there is weakening of the joint ligaments from overstretching and loss of tone may result with increased mobility. Only in the lowest fractures should extension be applied to the tibia to avoid the hæmatoma in the lower end of the femur and thigh if a nail is employed. Occasionally the nail becomes loosened in the bone and the danger of infection is much greater. The employment of the clamp obviates this.

A very important point is the position of the limb. The most advantageous position is semiflexion with the leg suspended in a hammock-like contraption suspended from a framework attached to the bed. The framework for the hammock as well as that for the extension should be attached to the bed so that the removal of the patient for X-ray examination may be accomplished without moving the limb. Contra-extension is rarely needed in the treatment of adults as the body-weight is generally sufficient. In the cases of children it may be necessary. The value of frequent X-ray examination for control is hardly necessary to mention as it is self-evident. Constant watchfulness on the part of the surgeon is also necessary for a good result. Turning the case over to an interne after applying the extension is to be condemned. To obtain a good result a hearty and intelligent co-operation on the part of the patient is also necessary.

L. A. JUHNKE.

SURGERY OF THE BONES, JOINTS, ETC.

Leriche, R., and Policard, A.: The Value of the Signs Considered Indicative of Vitality in Bone Grafts (De la valeur des signes tenus pour caractéristiques de la vie des greffes osseux). *Bull. et mém. Soc. de chir. de Par.*, 1919, xlv, 902.

It is usually considered that a bone graft is alive if: (1) it fills its therapeutic rôle; (2) on radiographic examination it is found to have increased in volume; (3) at operation it is reddish and vascular, bleeds on curetting and has all the "aspect of life"; (4) fractures of the graft have become consolidated.

The authors state that while these signs have been accepted as a matter of faith, none of them has the least biological value. There is no macroscopical sign of life in a graft and there is only one criterion of any value, i. e., the histologic criterion.

Although a graft may be well vascularized and bleed easily, the bone tissue may be dead. When a graft takes, its bone tissue is resorbed and new bone gradually takes its place. Osteogenesis is the result of local deposits of calcium. Resorption is followed by ossification and it is for this that the graft remains, and plays its part.

In the authors' opinion the use of preserved grafts of dead bone, either human or heteroplastic grafts, will be the method of grafting of the future, and henceforth efforts should be turned in that direction.

W. A. BRENNAN.

Goyanes, J.: Resection and Transplantation of Large Bone Segments in the Treatment of Sarcoma of the Long Bones of the Extremities (Resección y transplantación de grandes segmentos óseos en el tratamiento del sarcoma de los huesos largos de las extremidades). *Rev. españ. de cirug.*, 1919, i, 251.

Cases of sarcoma involving bone which in the past have been treated by amputation of the limb can now be treated by resection, owing to progress in the plastic surgery of the osseous system.

Large segments from the diaphysis and above the diaphysis transplanted with their periosteum preserve or regenerate their vitality and replace the functions of the resected areas.

The transplant seems to be resorbed slowly by osteoporosis and is replaced by degrees without loss of its macroscopical individuality by the osteogenetic power of the periosteum or of the neighboring metaplastic cellular tissue.

The transplant modifies its architecture in conformity with the law of functional adaptation and tends to acquire the form and diameter of the replaced segment.

Owing to its lesser importance the fibula is to be preferred for the replacement of large extirpated segments, its diaphysis or the diaphysis with the epiphysis being utilized according to the graft required.

Infection of the wound does not necessarily mean the loss and elimination of the graft.

Partial sequestration of the graft is possible, the remainder being integrally preserved as in the case of a normal bone attacked by septic infection.

In addition to transplants for pseudarthrosis, etc., the author's statistics comprise 7 large bone resections for sarcoma, 4 of the tibia and 3 of the femur. In one case in which the tibia was involved a transplant was obtained from the diaphysis of the fibula according to the Hahn-Huntington method; in the other three tibia cases resection of part of the diaphysis and of the inner epiphyseal surface and free graft of the fibula gave excellent results. In three cases in which the femur was involved the lower part of the diaphysis and epiphysis was resected and the upper half of the fibula grafted. One patient died from shock. In another case an amputation was necessary on the eighth day owing to gangrene produced by popliteal thrombosis. The graft was found in good condition. The other patient is doing well.

W. A. BRENNAN.

Marshall, J. C.: Osteoplastic Closure of Cavities in Bone. *Brit. M. J.*, 1919, i, 759.

The frequency of bone sinuses following bone injury has made sequestrotomy one of the most common surgical procedures. In most instances this operation is attended with satisfactory results though the remaining bone cavity frequently gives rise to continued drainage and constitutes a condition which is of considerable clinical importance.

The author summarizes the main points in his discussion of the treatment as follows:

1. Filling bone cavities with "bipp" is in every case a successful method of treatment provided always that the preparation is thorough.

2. There are two types of cases: (1) the larger group, in which a sufficient thickness of soft tissues is present to cover the opening and simple filling is adequate; (2) the type in which no soft tissues can be placed over the opening which lies flush with the skin; these cases can be treated successfully by covering the opening with a skin-bone flap and filling the cavity with "bipp."

3. The advantages of the "bipp" method of treatment are: (1) less extensive disturbance of tissues than in any other operative procedure for closure of the cavity—no small consideration in war scars; (2) anatomical restoration of the bone with resulting strengthening rather than weakening; exposure of fresh osteogenetic surfaces; and (3) a good cosmetic result. H. W. MEYERDING.

Symonds, C. J.: The Treatment of Bone Sinuses by Solid Metal Drains. *Lancet*, 1919, cxcvi, 971.

The author reported twenty-five years' experience in the treatment of sinuses in bones by means of both hollow and solid metal and glass drains, at a meeting of the London Medical Society. He called attention to the value of such drains in procuring satisfactory drainage in infective osteitis, especially when it is impossible to obliterate the cavity by dishing it out. They may be left in place and reduced in size as necessary. H. W. MEYERDING.

Willems, C.: Immediate Active Mobilization in the Treatment of Gunshot Wounds of the Joints. *Med. Rec.*, 1919, xcv, 999.

Willem's treatment of purulent arthritis consists in very extensive bilateral longitudinal incisions into the joints followed by immediate active mobilization. In applying mobilization in the treatment of joint suppuration his first object was to obtain effective drainage. Whereas hitherto it has been impossible to drain a joint thoroughly, immediate active mobilization is a means as simple as it is efficacious in effecting such drainage after a simple arthrotomy.

Taking the knee-joint as an example, the author describes the way in which active movements assure drainage and emphasizes the following points: first, the necessity of making a long incision, passing beyond the level of the quadriceps cul-de-sac above and the articular line below; second, the necessity of keeping the incision constantly open throughout its whole extent and preventing union at the angles; third, the necessity of reaching the maximum excursion of the movements early. Ordinarily the longitudinal linear arthrotomy should be bilateral. A unilateral incision should be made only when the secretion is scanty. In such cases the external incision will be more efficacious. The horseshoe incision is strongly condemned.

In the case of the elbow bilateral arthrotomy is less often necessary, the external incision usually being sufficient unless the secretion is very abundant.

When treated by a wide incision and active mobilization a suppurative arthritis acts like an ordinary abscess. The suppuration is at first abundant, then gradually decreases to a few drops, and finally dries up.

The arthrotomy wounds early show a tendency to become the site of exuberant granulations which form voluminous masses rolling outward. These masses also press into the joint, becoming continuous with the synovial membrane which is red and presents an œdematous puffiness over the entire surface. This hides the borders of the cartilaginous surfaces, but the latter remain healthy and preserve their normal appearance for they are neither ulcerated nor detached. There is no evidence of involvement of the bone by the infection, which seems to be confined strictly to the synovial sac.

It is true that the knee swells, or remains swollen and assumes a globular aspect, but the enlargement is due in great measure to the tumefaction of the arthrotomy wounds. On palpation the peri-articular tissues are found to be soft and not infiltrated, and the contour of the bone is made out easily. The popliteal space especially preserves its normal suppleness and is not painful on pressure. In no case in which the method was applied vigorously and persevered in to the end was there a peri-articular abscess, which is the best proof that retention of the pus and extension of the infection are effectively prevented by this treatment.

The appearance and the quantity of the secretion vary according to the nature of the infecting micro-organism. In streptococcal arthritis suppuration is relatively slight in amount; the wound has a clean look and is covered with a glassy varnish of characteristic appearance. When other bacteria are present the pus may be abundant, thick, or stringy. On the granulating surfaces, areas of dried exudate form like that which glues the eyelids together in conjunctivitis. At the end of a variable but always a long time, the suppuration is reduced to an insignificant amount; pus no longer appears except in a few drops when extreme movements of flexion or extension are made.

The nature of the micro-organism seems to influence the duration of the suppurative process, the streptococcic infection lasting the longest, often for several months. Other things being equal, the cases in which suppuration is most profuse at the beginning are not those which last longest; on the contrary, the prolonged cases are those in which the suppuration is scanty and of a glassy appearance.

As the suppuration diminishes, the arthrotomy wounds shorten and union proceeds from the two angles until finally only a sort of fistula remains which closes and then re-opens from time to time to give exit to a few drops of serous fluid. Finally, cicatrization occurs and the wound is healed.

It is not advisable to let matters go as far as spontaneous closure of the wound for in his earlier cases, in which the author permitted this, he observed that from the moment the articulation dried up there was a tendency to articular stiffness. To prevent this condition the wound should be closed progressively by secondary suture. In practice, Willems now closes the incision which gives exit to the lesser amount of secretion as soon as the suppuration is noticeably reduced. Later he partially sutures the other wound in the section which serves least for drainage. After a certain period of drainage by active movements the discharge makes for itself a definite channel at one part of one of the incisions and it is here that the terminal fistula occurs. In taking the precaution to anticipate this process by partial suture Willems avoids stiffening the joint and reduces the duration of treatment. The secondary closure should not be attempted until the surgeon has acquired sufficient experience in the method and is able to determine exactly the opportune moment for the operation. The secondary closure gives a better cicatrix, permits suturing layer by layer, and prevents herniæ of the synovial membrane. These herniæ are encountered more frequently after purulent arthritis when spontaneous closure of the arthrotomy wound has occurred than after non-infectious lesions sutured in a more careful way.

Large and pliable cicatrices leave a relaxed articulation which sometimes results in a lack of the firmness in the joint which is so necessary for walking. This weakness is partly responsible for the effusion which sometimes occurs after complete closure of the wounds. Willem has observed that effusions, sometimes in large amounts, occur rapidly in formerly infected joints in patients who were cured after several weeks or months and had perfect mobility and marked absence of muscular atrophy. In some instances they follow a traumatism, as that resulting from a fall, but at other times they appear without any appreciable cause. Like all traumatic effusions, they are associated with a certain amount of pain and marked reduction in the extent of movement, especially in walking. When such effusions are evacuated by puncture, as in ordinary hæmarthrosis, the pain and functional weakness disappear at once. The fluid removed is serous, more or less clear and always sterile.

The author believes that the absence or presence of a peri-articular abscess indicates whether an infected joint is being well or badly drained. When the movements are insufficient or when the incisions are too short, the patient is apt to develop septic fever which falls as soon as perfect drainage of secretion is again assured. While then remaining very moderate, the fever usually persists for several weeks. Often, however, the entire course of the disease is almost completely apyretic. The patients walk about with their suppurating knees or elbows protected by simple small dressings, and have the appearance of perfect health.

The technique of the movements should be exactly the same in suppurative arthritis as in non-infected lesions; in both, the mobilization should be begun immediately after the arthrotomy. The mobilization ought to be active, done by the patient himself by simple contraction of his muscles. Passive movements should never be employed. The movements should be pushed to their extreme limits and repeated without interruption.

Mobilization should not be accompanied by any other method of drainage. Irrigation is absolutely forbidden. A small dressing, loosely applied, should be used and renewed as it becomes soiled. Premature cicatrization must be opposed by separating the edges of the wound daily by forceps grasping the skin. Never introduce the fingers or any instrument into the joint cavity. In cases of purulent arthritis of the knee the author allows his patients to walk even before cicatrization of the wounds. While not painful, the movements are laborious and at first are made with considerable effort. His experience has been that patients already gravely infected often hesitate to make the necessary effort for vigorous muscular contractions and that therefore it is necessary to place them under the care of someone whose sole duty it is to see that they do. The author is emphatic in repeating that in purulent arthritis immediate mobilization alone will give perfect functional results.

Pain does not exist except when pus is incompletely drained from the joint. The patients learn very rapidly to recognize the cause of the pain themselves and soon realize that the best way to stop it is to make more frequent and more extensive movements.

Toward the end of the cicatrization, closure of the wound may occur too soon and the signs of retention may appear. This may call for repeated puncture of the knee before the final closure of the wound. The author insists that puncture is always sufficient in these cases of terminal retention and that it is never necessary to resort to mechanotherapy.

Willem's method is applicable also in suppurative arthritis accompanied by bony lesions and when the ligaments of the joint are very largely destroyed. In cases of comminuted fractures of the epiphysis continued extension should be combined with mobilization.

Another condition in which the knee may be mobilized is purulent arthritis with extensive destruction of the soft parts of its anterior aspect. When suppuration has destroyed the crucial ligaments of the knee and resulted in posterior subluxation of the tibia, the active movements may be kept up if continued screw extension is applied to the leg.

The author concludes his article with the admonition that we should never be contented with partial success. In cases of purulent arthritis with extensive bony lesions conservation with well-conducted mobilization will give functional results infinitely superior to those of resection, but here the treatment is long and difficult. He who has the

courage to undertake it will have unhoped-for success which will well repay him for his trouble.

E. C. ROBITSHEK.

Langworthy, M.: The Treatment of Joints Stiffened by War Injuries. *J. Orthop. Surg.*, 1919, i, 349.

The changes in the tissues, namely, the capsule, ligaments, muscles, and tendons, are those of scar formation and loss of substance or both.

The basis of treatment is gradual movement of the joint by a series of small movements which increase daily, starting always from the original position and followed by immobilization for about twenty-four hours in the new position.

The method described can be employed so gently and can be so easily graduated that the greater danger of lighting up latent infection is minimized. For this reason also it can be employed much earlier, which is a distinct advantage. The ability to return or resume the original position will not be lost. In other words, a knee which is stiff in complete extension and which is being flexed will not loose the power while regaining flexion to extend completely. The most valuable feature of this method is the relaxation of all tissues which takes place during the daily period of solid immobilization. This occurs to such an extent that the force necessary to increase the range of movement each day is minimized. The process really becomes a process of repeatedly taking up slack. Also it would seem probable that the short tissues are allowed time to grow longer; they are lengthened constructively rather than stretched destructively. There is, moreover, a psychical value which should not be underestimated. Observation by the patient of the daily improvement and the fact that he moves the limb with his own muscles from the starting point through a gradually increasing arc, undoubtedly shorten the duration of treatment. Thus also the method accomplishes a gradual re-education of muscles which have not been functioning. This is not nearly so easily accomplished after a forcible manipulation under anæsthesia, in which case the greatest desire of the patient is to prevent the pain which movement causes.

In treating a knee which is stiff in extension the knee is allowed to be its own hinge. A snug plaster cast is applied to the leg from just above the malleoli up to the point on the leg which touches the thigh when the knee is flexed to 90 degrees. Another cast is applied to the thigh as high as possible and down to the point which touches the calf when the knee is fully flexed. A piece of telephone wire is bent and incorporated in the plaster and caused to project at the back of the upper end of the leg cast so that the end of the board 3 inches wide laid against the back of the knee and pushed downward from above will be maintained about one inch below the edge of the upper end of the leg cast. A similar piece of wire is incorporated in the back of the thigh cast and caused to project half way between the upper and lower edges so that the end of the board laid against this wire loop cannot progress upward. At the extreme upper edge of the thigh cast and at the lower edge of the leg cast posteriorly a wire is incorporated in the plaster and allowed to project as a small loop. A piece of small rope and the light board mentioned complete the materials necessary for beginning treatment.

The patient is placed face downward on a table. In the top of this table it is well to have cut two slots so that a wide strap can be placed over the thigh casts, through the slots, and anchored below for the purpose of holding the thigh on the table firmly. The ankle is then grasped around the malleoli and raised with the knee thus flexed, no matter how slightly, and the board marked so that it may be cut to fit between the two wire projections in the cast above and below the knee. At the time this measurement is made the thigh cast must be shoved as high as possible since it has a tendency to slip down because of the conical shape of the thigh. When the board is ready, the strip of webbing or rope is passed through the small loop at the lower end of the leg cast and the loop at the upper end of the thigh cast. The knee is then flexed as far as comfortable by lifting the foot. The board is slipped between its wire loops and the rope pulled tight and tied by an assistant.

The little board placed as directed prevents the thigh cast from slipping down, and because its upper end is anchored so high up on the thigh cast it also prevents the lower edge of the cast from pushing forward into the popliteal space. On the correct arrangement of this small piece of board and the wire loops which hold it hangs the entire efficiency and comfort of the apparatus. The next day the patient is again placed on the table, the rope is untied, and the board removed. The knee is passively extended and as much active flexion and extension as is possible is performed by the patient several times. This having been done, the knee is flexed as much as possible in the same way as at the beginning of treatment and the board is marked again to fit into its wire loops which, with the increase of flexion, will be approximated. When the board has been shortened, flexion is repeated, the board slipped in, and the rope tightened and tied as before. It is sometimes difficult to tie the rope so that some of the flexion is not lost. This may be remedied and the rope made as tight as desired by laying a sufficient number of small blocks of wood on the board to reach and tighten the rope.

It will be seen that this is not in itself a device for flexing the knee. It is rather a means for immobilizing the knee in the position in which it is placed by the operator.

Flexion of an elbow stiff in extension is accomplished in exactly the same way, the arm being prepared as is the thigh, and the forearm as is the leg.

Following the same method the author treats contractures of other joints.

L. C. DONNELLY.

Pennell, V.: Tendon Transplantation in Drop-Wrist Due to Nervous Injury. *Brit. M. J.*, 1919, i, 704.

The author gives the following indications for tendon transplantation at the wrist-joint: (1) severance with large loss of substance of the musculospiral nerve; (2) severance of the musculospiral nerve with much bony injury and prolonged suppuration; (3) when very rapid and complete wasting of extensor muscles has supervened; (4) in all cases of division of the posterior interosseus nerve.

In severance of the posterior interosseus nerve just below the midpoint of the forearm the author detaches the supinator longus at its intersection and joins it with the extensor ossis metacarpi pollicis and the extensor carpi radialis longior with the common digital extensors or the extensor longus pollicis if the finger extensors are spared.

In complete musculospiral paralysis the use of the hand is lost, due to the fact that the fingers cannot be closed until the hand is put in slight extension. This has led to the fixation of the wrist or support in the latter position by means of a ligament made of fascia lata. The fascia may be attached to the third and fourth metacarpals and to the radius and ulna, and the flexor carpi radialis anastomosed to the extensor communis digitorum or the pronator quadratus. In addition, the palmaris longus may be anastomosed to the extensor ossis metacarpi pollicis to aid in thumb abduction.

The author does not favor the transfer of the flexor carpi ulnaris and radialis to the extensor carpi ulnaris and radialis longior. Attention is called to the necessity for strict asepsis, correct alignment of the tendons, early movement, and re-education of the transplanted muscles. The author's conclusions are based upon the observation on twelve cases in which an operation was performed with favorable results.

H. W. MEYERDING.

Verrall, P. J.: Stiff Fingers; with Special Reference to Methods of Treatment by Metal and Plaster Splints. *J. Orthop. Surg.*, 1919, i, 335.

Stiffness of the fingers may be due to loss of extension, loss of flexion, or both, but at any given time treatment should be directed mainly to one or the other.

Loss of extension is commonly due to (1) contracture of the muscle, traumatic, ischæmic, or postural; (2) adhesions of the tendons to the skin or other structures; (3) peri- or intra-articular adhesions; and (4) nerve lesions of the ulnar or median nerves.

Loss of flexion may be due to (1) involvement of the extensor tendons in scar or callus, especially in wounds of the metacarpal region; (2) adhesions of the flexor tendons to scars; (3) peri- or intra-articular adhesions; and (4) traumatic or postural contracture of the muscles.

Tendons tightly bound down by scar tissue should be freed by operation and the scar removed. Those adherent to the skin only may be successfully treated by massage or, if this fails or is too tedious, by excision of the scar. Short tendons should be stretched as much as possible before operative lengthening is attempted.

Tendon grafts are not so successful on the flexor aspect of the hand as on the dorsum.

Cases of extension scars on the dorsum of the hand with destruction of the extensor tendons and perhaps metacarpal fractures are frequent. A successful method of treatment consists of excising the scar and bringing the skin together without any effort to unite the tendons. After the wound is healed gentle massage will prevent adhesions of the cicatrix to the deeper structures. At a second operation strips of fascia lata about 5 mm. wide are sutured to both ends of the tendons and in this way the gap is bridged. Movement is begun early.

A few types of stiff fingers are described to illustrate the methods.

1. Fingers flexed with wrist dorsiflexed; extension possible with wrist flexed. This is the type of ischæmic contraction which is due to shortening of the flexor tendons. It is treated by the use of the Jones splint applied to the flexor aspect and beginning at the distal joint. Each joint is left in the deformed position until all the joints distal to it are corrected. Constriction must be avoided. The tendon bound down by the scar must be relieved by operation.

2. Wrist movement free; one or more fingers flexed at all three joints; contraction unaffected by the position of the wrist. For the treatment of this condition, which should consist of extension without loss of flexion, the author has devised a metal splint which is held to the dorsal surface of the hand and forearm by plaster of Paris. This splint is 16 inches long, ½ inch wide and ⅛ inch thick and terminates in a triangular loop. The transverse bar of the triangle is 4 inches long. To follow the bend of the partially dorsiflexed wrist the axial bar is curved. A small thin bar placed transversely prevents the splint from rotating. The terminal triangle is curved slightly toward the palmar surface. The hand and forearm are first encased in felt through which the thumb protrudes. Over this, the splint is applied, and over the splint a plaster cast extending down to the level of the neck of the metacarpals. At the end of twenty-four hours when the cast has hardened adhesive plaster is applied so as to encase the two distal phalanges of each finger and leave a loop at the end of the finger. The method of cutting the plaster is illustrated by a diagram. Through the loops tapes are passed and tied to the transverse bar of the triangle. As extension improves these are gradually tightened. The tapes are untied every day, the fingers flexed to their original position several times, actively and passively, and the tapes retied.

The treatment of fingers stiff in extension is along similar lines except that the splint is modified somewhat and applied to the anterior (flexor) surface.

J. J. KURLANDER.

Nutter, J. A.: Arthrodesis of the Hip-Joint and Its Indications. *Canadian M. Ass. J.*, 1919, ix, 548.

The author discusses briefly the anterior route of approach to the hip-joint and describes the posterolateral route as follows: "The incision is from the anterior-superior spine downward and backward to the great trochanter; then directly downward along the femur for 2 inches, with a short backward incision where the two first incisions meet. The tensor fasciæ femoris and the gluteus medius are separated, the fascial expansion of the gluteus maximus is cut through in the line of the posterior incision, and the great trochanter, with its many muscular attachments, is exposed. The other part of the great trochanter is then chiseled free, carrying with it the gluteus and other muscles which overlie the femoral neck and head. After reflecting these upward and backward the joint capsule is exposed." In closing, the trochanter is wired into place. A spica is applied with the leg in abduction to remain several months.

Arthrodesis of the hip-joint is indicated especially in:

1. Monarticular hypertrophic arthritis of the hip-joint, particularly in working people who need a straight weight-bearing leg.

2. Deformity with or without pain in adults following hip-joint disease of childhood in which ankylosis is not complete. In these cases arthrodesis removes the pain, the deformity, and the possibility of return to activity of the joint focus.

3. Deformity with incomplete ankylosis after acute infectious arthritis of the hip, e. g., gonorrhœal arthritis.

4. Traumatic conditions and old fractures of the femoral neck.

K. L. VEHE.

Ogilvy, C.: An Operation for the Permanent Correction of Weak Feet in Children. *J. Orthop. Surg.*, 1919, i, 343.

In these cases there is an abnormal eversion of the feet. The correction is obtained by inverting them and keeping them inverted. This may be done by raising the inner border of the heel of the shoe or both the inner border of the sole and the heel. A metal plate or arch support worn inside the shoe is used by many to accomplish the same end. However after treatment has been continued for several years and these correcting shoes or arch supports have been removed, it will be seen that the eversion originally present still persists. This is true of cases that have been under the author's care for four or five years. It is found that the point of greatest relaxation is at the astragalonavicular joint. Here there is a ball-and-socket joint upon which the fore-foot pivots. When the toes are turned outward the strain upon this joint is increased and is followed by increasing relaxation of the joint ligaments. The head of the astragalus rotates downward and inward. This articulation is the site of the greatest strain.

For the permanent correction of this condition the author produces an arthrodesis of the astragaloscaphoid joint. After this the foot is put up in a plaster cast in marked inversion, care being taken to exaggerate the varus.

The cast is worn from five to six weeks at the end of which time the foot will be found to be in overcorrected inversion. This will gradually disappear until at the end of three months from the time of the operation the patient will be able to walk with ease and comfort. It is well to keep the inner border of the heels raised $\frac{1}{16}$ of an inch for a year after operation.

The operation should not be performed before the patient is eight years of age.

J. J. KURLANDER.

Zeuch, L. H.: The Robert Jones Operation for Talipes Equinovarus. *Illinois M. J.*, 1919, xxxv, 241.

The indications for the Robert Jones operation for talipes equinovarus are: (1) a slight to moderate degree of claw-foot, due to transient paralysis of the short flexors; (2) talipes equinovarus with marked inversion of the foot; and (3) foot-drop due to infantile paralysis.

For marked contraction of the tendo achillis which accompanies these deformities, Jones advises subcutaneous tenotomy. The open method is recommended as it is more accurate and poor results practically never follow. The author used the open method according to Anderson. Tenotomy relieves the flexion, but not the extreme inversion of the foot. To accomplish this, Jones shortens the extensor proprius hallucis by implanting it into the first metatarsal bone.

The technique is as follows: A 2-inch incision is made over the tendon near its insertion into the first phalanx of the great toe and the tendon exposed, clamped, and cut close to its insertion. A long catgut suture is then threaded through the distal end of the tendon and drawn through a drill hole in the head of the metatarsal bone. This is facilitated by making a small counter-incision from the planter surface. The tendon is then sutured to the plantar fascia, the union being re-inforced by a suture passed through the periosteum, tendon, and periosteum on the opposite side.

By the severing of the tendon, the toe becomes superflexed, but this is partially compensated by the short extensor of the great toe. The end-results are good. Following the operation the foot is held in a cast in the over-corrected position for three weeks. At the end of this time the cast, which is worn until there is firm union, is removed daily to permit gentle massage of the foot. The patient is allowed to walk after six weeks, and if there is any tendency to inversion, a brace is applied.

The results are good whether the condition is congenital or due to infantile paralysis or spasticity.

J. J. KURLANDER.

SURGERY OF THE SPINAL COLUMN AND CORD

McMechan, F. H.: Laminectomy under Local and Regional Procaine Anæsthesia. *Am. J. Clin. Med.*, 1919, xxvi, 416.

In this article the author has endeavored to show the scope and utility of procaine anæsthesia by quoting from the current literature on the subject. He believes that shock and hæmorrhage, which are the chief causes of death in laminectomy, may be reduced to a negligible minimum under appropriate local and regional anæsthesia.

Points in the surgical technique emphasized by McMechan are: (1) ample exposure; (2) X-ray identification of at least one lamina before beginning the operation; (3) coffer-damming the spaces on either side of the dural flaps with cotton; (4) gentle manipulation of the cord or roots, and the stovaine block as a prophylactic against shock; (5) minute closure of the dural incision with fine needles and silk; and (6) careful juxtaposition of each layer—muscle, muscle-sheath, intervertebral aponeurosis, and superficial facia. E. C. ROBITSHEK.

Adson, A. W.: Results of the Surgical Treatment of Spinal-Cord Tumors. *Minnesota Med.*, 1919, ii, 205.

The author believes that all too frequently patients suffering from a spastic paraplegia are given a diagnosis of transverse myelitis, sclerosis, or lues without a thorough neurological examination and thus are deprived of surgical treatment. He notes that the history of symptoms in cases of spinal cord tumors is not always constant but usually is suggestive. The onset is gradual, generally beginning with sensory changes, but is soon accompanied by motor disturbances. The symptomatology grows progressively worse even though there are periods of slight improvement. The characteristic neurological findings are the sensory level, i. e., the partial or complete loss of pain, tactile and temperature senses at the level of and below the involved segment of the spinal cord, exaggerated reflexes, and motor disturbances with or without root pain. The tumors are situated at three levels, the extradural, subdural but not intramedullar, and intramedullar. The pathologic tissues of spinal-cord tumors vary, but 75 per cent are non-malignant and from 50 to 60 per cent are removable.

The results reported in the article were obtained from a series of sixteen laminectomies performed for spinal-cord lesions at the Mayo Clinic in 1917. Thirteen of the patients had tumors and three had meningomyelitis. Eight of the thirteen tumors were removed completely; five of them were psammomata, one a glioma, one a fibroma, and one an angioneuroma. Of the five non-removable tumors, two were intramedullar, one an angioma, one a gumma, and one a unilateral inflammatory mass. Twenty-five per cent of the patients recovered during the year after operation, 18.75 per cent are greatly improved, 25 per cent slightly improved, 8.75 per cent not improved. One patient died. Therefore 68.75 per cent recovered and were benefited while 31.25 per cent, including the patient who died, were not benefited.

SURGERY OF THE NERVOUS SYSTEM

Burrow, J. L.: War Lesions of Peripheral Nerves. *Med. Rec.*, 1919, xcv, 904.

The report is based on a study of over 15,000 routine examinations of lesions of the nervous system.

In direct injury of a nerve trunk there may be (1) complete division of the nerve, (2) total division of only a few fibers, (3) injury to the nerve sheath alone, or (4) bruising of the nerve trunks.

Complete division of the nerve is rarely seen in cases of bullet wounds in large nerves. Exposure after a few weeks reveals a dense fibrous swelling in the center of the nerve trunk where the bundles have been cut across. When due to shrapnel or metal fragments there is more laceration and dense fibrosis. If the division has been complete and the ends separated, a large soft swelling is seen at the proximal end and a smaller harder one at the peripheral end.

In total division of only a few fibers a lateral neuroma develops, varying in appearance with the degree of infection present. Young vascular fibrous tissue spreads widely about the area after a few weeks of sepsis. When clean, there is a sharply defined lateral swelling consisting of fibrous tissue, varicose vein fibrils, and remnants of degenerated nerve fibers. On the uninjured side of the nerve healthy fibers pass over the swelling into the peripheral end.

In cases of injury to the nerve sheath only, the pathology observed at operation may appear slight to the naked eye. On opening the sheath a few strands of young fibrous tissue are seen entering the nerve bundles separating them and causing torsion in their course. The local thickening may suggest a lateral traumatic fibroneuroma.

Bruising of nerve trunks is due to injury of structures closely associated with the nerve and occurs usually after explosions as in cases of "nerve concussion." Many of those so injured return to duty in a few days. Others develop numbness along the affected nerves or even the typical syndrome of causalgia. The exact pathology in these cases has not been

carefully observed, but microscopically an intraneural fibrosis has been made out where to the naked eye the nerve appeared little damaged.

Indirect injury to nerve trunks may be caused by displaced bone fragments or constriction by callus or organized blood-clots.

Injury by displaced bone fragments is very common. The nerves involved are chiefly the musculospiral and external popliteal nerves. The cut ends may be widely separated and either embedded in bone or dense scar tissue or bulbed at either end.

In constriction of nerves from callus or organized blood-clots three phases may be noted. In the early phase there are signs of bruising or a partial lesion. Later, there is a stage of irritation pressure, and finally, progressive loss of function due to Wallerian degeneration.

Fibrosis following intense suppuration, "ischæmic paralysis," is often difficult to diagnose and treat, especially in the acute stage. The problem is to determine how much is due to vascular and how much to actual nerve injury. The pathologic study of a few cases has revealed Wallerian degeneration as a result of local necrosis by infection or constriction during repair.

The system employed as a routine to arrive at a diagnosis in injuries to the nerves is as follows:

1. Preliminary notes with regard to the nature of the injury, the patient's posture when injured, the immediate effects, and the results of treatment.

2. Examination of the injured part with regard to the position of the wounds and scars, the attitude of the two limbs, contractures, mobility of the joints, the degree of atrophy, trophic skin changes, the condition of the hair, vasomotor changes, sudomotor changes, and the condition of the nails.

3. Palpation of scars to determine the presence of induration, nodules, or neuromata; of nerve trunks, to determine the nature of the sensation produced in the region supplied by the nerve; of the joints, to determine the degree of ankylosis; and of the muscles and tendons individually to avoid mimicry by healthy structures and to determine the degree of tone and pain on pressure. In addition, percussion is applied to the muscle bellies to observe the nature of the response to mechanical stimulation.

4. Investigation in regard to the response to sensory stimuli. In this examination care is taken to have the limbs thoroughly warmed and the stimuli standardized. The stimuli used are as follows: (1) light touch, using a small, soft, camel's hair brush and charting areas of complete and partial anæsthesia; (2) pin-prick, using the spring algesiometer devised by Head and Holmes by which the degree of pressure can be standardized; (3) movement of joints and deep pressure on muscles and bones to determine deep sensibility; (4) deep pressure on the skin with the blunt end of a pencil to determine pressure sensations (an algometer is essential to gauge progress during regeneration); (5) thermal stimuli with the use of nickel silver test tubes which taper to a small blunt point, Goldstein's pointed solid metal cylinders, or a moderately thick copper wire; (6) Weber's test to determine the recognition of two blunted points of a compass applied simultaneously to the skin in the long axis of the limb, a function associated with deep pressure sensation; (7) vibration by means of a tuning fork placed at right angles to the long axis of the bone to determine the vibration sense in bones, etc.; (8) tests to determine the discriminating sensibility which involves distinguishing the size and shape of common objects placed in the hands; and (9) electrical stimuli, using a rapidly interrupted current of short duration and a slowly interrupted constant current, the skin being warm and moist.

It has been noted that sensations of pain, heat, and cold are intimately bound together. The author illustrates by a diagram the sensory picture in a case of unilateral lesion of the cord which produced the Brown-Sequard syndrome.

For measurements of the currents for electrical stimulation, the Lewis-Jones condenser set has been used considerably but is less satisfactory than an electrodiagnostic method which relies upon averages or the character of the muscular contractions.

In complete loss of function in a nerve trunk there is complete flaccid paralysis of the affected muscles followed by atrophy and possibly by contracture. Also observed are arthritic changes and alteration of the joint axes with contracture. Definite groups of muscles are affected and there is increased mechanical excitability on direct percussion. The tender reflexes are abolished. The skin is dry, scaly and "branny," reddish-blue in color, and in cold weather, swollen, cyanosed, and liable to chilblains. The hair resembles a corn field after a heavy rainstorm. Goose skin reflexes are absent. The nails are brittle, dry, curved, and ridged. On palpation of the nerves, swelling may be detected at the site of injury. Tinel's sign is absent. An area of loss of light touch and pin-prick sensation is surrounded by a large zone of hypoæsthesia. Thermanæsthesia corresponds closely to the loss of the sensation of sharpness. The area of deep sensibility varies with each nerve. A few weeks after injury the typical reaction of degeneration to electrical stimulation is seen. A slight and persistent briskness in the galvanic response may be accounted for by the presence of a few healthy nerve fibers.

A total lesion which shows no evidence of regeneration after twelve weeks should be operated upon at once. Good sized gaps after resection may be bridged by autogenous nerve grafts.

To improve local circulation after operation the use of electrotherapy is of value; also daily massage and movement of neighboring joints. In addition, interrupted galvanism should be applied to each paralyzed nerve separately. At the first sign of voluntary power the electrical stimulation should be stopped and active exercises substituted to re-educate the muscle movements. Later the patient should be given scientifically arranged exercises in a curative workshop.

In cases of incomplete lesions the signs and symptoms of a complete lesion may be present during the first two weeks although there is some pain, a bruised feeling under the skin, and partial preservation of the deep sensibility. After the second week the signs of a partial lesion are definite.

If the improvement is progressive the use of massage, electricity, and re-education is sufficient. When improvement is arrested for two months surgical intervention is indicated. The healthy motor fibers may be picked out at operation by the application of a small sterile electrode and the use of a weak faradic current.

All cases showing irritative phenomena are cases of partial lesion. The main causative factor is fibrosis of the nerve trunk. The signs which appear after the fourteenth day vary with the extent of the injury. The whole picture results from irritation at the central end of an injured portion of the nerve which results reflexly in the various vasomotor and trophic changes. There is intensive pain and burning, aggravated by heat and relieved by cold, which often wrecks the patient mentally.

Cases of minor causalgia may clear up in a few weeks. If not improved in eight weeks, surgical interference is indicated. If the signs of increasing compression appear, operation is advisable at once.

Excision of the affected portion of the nerve with end-to-end suture or bridging of the gap by nerve graft is safest. Local injections of alcohol are of only temporary benefit.

The signs and symptoms of regeneration are described as follows: Within a month after nerve suture the skin assumes a healthy color. Desquamation becomes normal and the nails become soft and pliable. Trophic sores heal quickly. Within two months Tinel's sign is noted at increasingly lower levels. Later the deep sensations gradually return and are soon followed by sweating and the skin sensations to coarse stimulation. The return of voluntary muscle control depends on the nerve involved and varies from six to eighteen months. Pilomotor functions are late in appearing, being dependent on a variety of skin sensations. The ability to discriminate various skin stimuli is the last function to recover.

Peripheral nerve injury may be simulated by a number of conditions, chief of which are: (1) traumatic contractures (Volkmann's "ischæmic paralysis"); (2) organic paralysis of the upper motor neurone type, e.g., a Brown-Sequard syndrome; (3) poliomyelitis, acute infective polyneuritis, etc.; (4) pithiatric (hysterical) paralysis or contractures; (5) physiopathic contracture (reflex paralysis of Babinski and Froment); (6) paresis and muscular atrophy associated with joint lesions; (7) contractures associated with painful scars and due to direct injury to muscles and tendons; (8) purely functional conditions due to bad muscle habit or incoördination of muscles formerly paralyzed; and (9) chronic tetanus.

E. M. Miller.

Hammond, T. E.: The Non-Operative Treatment of Nerve Lesions Involving the Upper Extremity. *J. Orthop. Surg.*, 1919, i, 320.

The position of physiological rest of the upper extremity has added much to medical knowledge. In this position the elbow is flexed at 120 degrees and the shoulder abducted at 15 degrees and inwardly rotated. The hands are held midway between pronation and supination to lessen the effect of gravity on the fingers. The wrist is dorsiflexed 45 degrees, with the fingers flexed 20 degrees at the metacarpal and midphalangeal joints and 5 degrees at the distal joints. The thumb is abducted 30 degrees in a plane at right angles to the palm and is flexed at 20 degrees at both the metacarpal and interphalangeal joints. With the hand in this position the plane of the anterior surface of the forearm passes half an inch below the tips of the fingers and a line continuing forward to the radial border of the forearm passes longitudinally through the thumb.

The position of physiological rest is maintained by muscle tone, by which is meant a slight, continuous, involuntary contraction dependent on a reflex arc with a center in the cord and afferent fibers from the ligaments and tendons and efferent fibers to the muscles.

By relaxation is meant placing a muscle in its normal position of rest so that no strain is thrown upon it.

When one group of muscles is hyper-relaxed the antagonistic group of muscles must be contracted. If this position were maintained in the normal hand for some time, the stretching of the muscles would give rise to paresis and the chronic strain on the ligaments to chronic inflammation and adhesions. In nerve lesions the nutrition of the tissues is impaired, paresis and adhesions following the slightest strain. In powerful muscles associated with the grosser movements the paresis is of little consequence and soon disappears. In the hand the slightest adhesions impair function.

If the hand were kept in the position of rest for several weeks no discomfort would result and on removal of the splint full forcible contraction of the muscles could immediately take place. The position of physiological rest is the only position in which paralyzed muscles can be placed without stretching the opposing group.

Hyper-relaxation is bad as it stretches the opposing muscles and ligaments and gives rise to paresis and adhesions.

In lesions of the musculospiral, median, or ulnar nerves the hand should always be placed in the position of physiological rest, the arches being carefully preserved in all cases.

The object of treatment is to increase the circulation, to improve the nutrition, and to prevent the formation of adhesions.

It is most beneficial to obtain a good circulation in the limb before the application of massage. In all nerve lesions of the upper limb a daily gymnastic

course is advisable unless there is some contra-indication such as active inflammation.

Muscles which are recovering function are easily tired. As soon as the contraction shows signs of diminishing the muscle should be immediately relaxed and massaged. Voluntary contraction of the muscles should be encouraged provided the paralyzed muscles are not stretched.

Much harm may be done to a muscle if it is stimulated after the onset of fatigue. As soon as the contraction to a given current begins to diminish the current should not be increased; electrical treatment should be stopped and massage substituted.

When ligaments are stretched chronic strain arises at the attachments; this gives rise to chronic reflex vasomotor changes, chronic inflammation, and the formation of adhesions.

The author describes the short and long cock-up splint to be used to maintain the position of physiological rest. This splint should be worn until all tendencies to recurrence of the contractions have been absent for six weeks and even then its use should be continued for six months longer. Heat, vibration, and massage are of value in restoring function. L. C. DONNELLY.

Platt, H., and Brentnall, E. S.: Faradic Stimulation of Nerve and Muscle During Operations. *Lancet*, 1919, cxcvi, 884.

Observations were made in 340 operations on peripheral nerves in which faradic stimulation rendered possible the identification of each branch exposed and the confirmation of its physiological integrity. When during operation a nerve is accidentally cut, a nerve trunk is found displaced far from its bed, an end-to-end anastomosis can be effected only after division of one or more proximal branches of the nerve because of retraction, or a nerve is gathered and concealed in a mass of adhesions, the only method of positively locating the nerves involved is by the faradic current.

The current is applied by the bipolar method in preference to the unipolar method. Two small surgical probes sharpened down to fine points at one end are covered with rubber tubing and bound together with a small wooden wedge between them. To these the wire is attached and the whole boiled and thoroughly dried. The current used is of minimal strength. P. W. SWEET.

Standage, R. F.: Tendon Transplantation and Fixation for Nerve Injuries. *Indian M. Gaz.*, 1919, liv, 161.

The selection of the proper treatment in cases of nerve injury and the resulting paralysis has been guided by a consideration of the surgical possibilities and the station in life of each patient, his necessity for a perfect result, and his ability to get proper after-treatment and efficient apparatus.

In the author's opinion tendon transplantation is the operation of choice in certain disabilities due to severance of a nerve trunk, especially in the paralysis due to division of the musculospiral nerve. In this latter type useful hands can be obtained in from two to three months by tendon transplantation while nerve repair gives a doubtful prognosis and requires about one or two years of persistent and careful after-treatment.

Tendon transplantation has been carried out in: (1) irreparable injury to the musculospiral nerve with wrist-drop; (2) similar injury to the median nerve; (3) injury to the musculocutaneous nerve in the leg with paralysis of the peronei muscles and resulting pes equinovarus.

For paralysis of the musculospiral nerve the following transplantations are done:

1. The pronator radii teres, detached from its radial insertion, is transplanted into the long and short radial extensors.
2. The flexor carpi radialis tendon, divided at the wrist, is brought around the radius, over the wrist extensors, and transplanted into the tendons of the extensores ossi metacarpi, primi and secundi internodii pollicis, and the extensor indicis.
3. The flexor carpi ulnaris tendon, divided at the wrist, is brought round the ulna and transplanted into the tendons of the extensor carpi ulnaris and the extensors of the three inner fingers.

For irreparable injury of the median nerve the Robert Jones' method is used. This consists in implanting the paralyzed portion of the deep flexor into its normal portion which is supplied by the ulnar nerve by transplanting the flexor carpi ulnaris into the flexor sublimis digitorum and uniting the extensor carpi radialis longior to the flexor longus pollicis.

Instead of transplanting the tibialis anticus from the inner to the outer side of the foot in musculocutaneous nerve injuries the author transplants the tendon of the peroneus longus into the tibialis anticus. This makes the latter a bifid muscle which permits the foot to be flat on the ground.

Irreparable injury of the external popliteal nerve and consequent drop-foot are treated by fixing the long peroneal tendon through a hole drilled in the tibia and making a loop to which is attached the lower end of the divided tibialis anticus.

Irreparable complete lesions of the sciatic nerve are treated by a series of operations as follows: (1) lengthening of the tendo achillis, (2) fixation of the peroneus longus and tibialis anticus to the tibia as described, (3) tenotomy of the hamstrings, and (4) resection of the knee to produce a stiff joint.

The ulnar nerve responds well to reparative surgery. This is fortunate as its lesions are crippling and cannot be repaired by tenoplastics. K. L. VEHE.

Stookey, B., and Guild, S.: A Method of Exposing the Musculospiral and the Posterior Interosseous Nerves. *Surg., Gynec. & Obst.*, 1919, xxviii, 612.

The spiral incision usually employed for complete exposure of the musculospiral nerve is unsatisfactory because extensive dissection may be necessary to

locate the nerve, the triceps muscle must be cut, and the nerve is apt to be involved in the cutaneous scar.

The author describes the three following incisions for exposure of the nerve from the lower border of the teres major muscle to the antecubital fossa:

The first incision lies in a line from the tip of the olecranon to the posterior angle of the acromion. It is begun three finger-breadths below the acromion and extends to 5 centimeters below the level of the deltoid insertion, going through the deep fascia. At the upper angle the long and outer heads of the triceps are separated bluntly in their fascial planes down to the lower angle of the wound. The aponeurosis presenting is incised, thus exposing the nerve up to the lower border of the tendon of the teres major.

The second incision runs parallel to the first except for a slight anterior curve at the lower end. It begins 12 centimeters above the antecubital fossa external to the brachialis anticus, following the interspace between it and the supinator longus in which the lower one-third of the nerve is found. By following the course of the nerve beneath the triceps and through the intermuscular septum a groove may be opened in which the severed ends of the nerve may be united without further dissection.

If a more complete exposure is necessary a third incision may be made midway between the other two, parallel to the first, extending from 3 centimeters above the level of the deltoid insertion directly downward for 12 centimeters, and carried through the triceps longitudinally. This third skin incision may be omitted if either of the first two is prolonged in an oblique or curved direction and the skin edges undermined.

All of these incisions give good exposure of the nerve and preserve the sensory skin supply.

The posterior interosseous nerve, the injury of which causes paralysis of the extensors of the thumb and fingers, may be exposed through an incision 12 centimeters long extending from the external condyle downward between the extensor communis digitorum and the extensors carpi radialis through the deep fascia. These muscles are separated bluntly up to their common origin. Here the fibers are cut longitudinally up to the external condyle and retracted, exposing the supinator brevis. At a point two finger-breadths below the condyle its fibers are separated bluntly, exposing the posterior interosseous nerve running at right angles to the muscle.

It should be a principle of nerve surgery never to attempt an incision parallel to a nerve having a spiral course. E. M. MILLER.

MISCELLANEOUS

CLINICAL ENTITIES—TUMORS, ULCERS, ABCESSES, ETC.

Quénu, E.: Traumatic Toxæmia with Depressive Syndrome (Traumatic Shock) in War Wounds (De la toxémie traumatique à syndrome dépressif (shock traumatique) dans des blessures de guerre). *Rev. de chir.*, 1918, lvi, 204.

The so-called traumatic shock of war wounds, according to Quénu, is a chemical intoxication of the tissues. In 1917 he first showed that this shock did not appear as early as it would if it had a nerve origin, that it preceded the formation of bacterial products, and that since it was not of nerve or septic origin some other cause of its appearance must be sought.

A rapid amelioration of the symptoms after early amputation in shocked patients, and the finding of shock with special frequency in those with injuries causing vast destruction of the muscles, were factors indicating that the source of traumatic shock observed in the wounded lies in the wound itself. The syndrome called shock, therefore, may be engendered by an intoxication and there may be a variety of toxic shock quite apart from that which occurs in extensive hæmorrhages, nervous shock, and the shock observed in the course of septicæmia.

Immediate shock, according to Quénu, results only in severe hæmorrhages or when abdominal wounds are complicated with effusion of the stomach or intestinal contents into the abdomen. He is satisfied that both experimental research and clinical, observation have shown that the traumatic destruction or amputation of a limb by a war projectile or similar injury does not produce immediate shock. Primary shock is that which is generally observed within the first few hours after injury.

In the chapter on pathogenesis a number of cases and facts are cited in favor of the theory that shock is due to a tissue intoxication. Quénu claims to have been the first to establish this theory solidly on a clinical basis.

Abdominal injuries offer particularly favorable conditions for the early development of intoxication of the tissues. This intoxication is purely chemical and is due to toxins of non-bacterial origin which result from rapid muscular proteolysis.

The conclusions reached by American authors and by Cannon in particular agree with those of Delbet and the author in regard to the causes of shock and of the succession of the different phenomena, the origin of which is resorption in the area of the injured muscular tissues. The nature and the genesis of the toxins generated in this area, however, are still matters for exact determination in the laboratory and by biological research. Certain studies already made show that in shocked patients there is a disturbance in the nitrogenous and carbohydrate metabolism and suggest some alteration in the hepatic function. Delbet has shown that the toxins of muscular autolysates are poisons which especially affect the nervous system.

Quénu believes that the term "traumatic shock" is a misnomer and prefers to call the condition "traumatic toxæmia."

The last chapter of the article is devoted to the treatment especially the value of blood transfusion. On the basis of the new theories as to the nature of shock, it logically follows that operation should not be avoided and that it is best to destroy the source of the toxins and thus obviate the intoxication due to absorption. In the case of a limb, sacrifice of the member may be necessary. A number of cases are cited from published reports in which shock rapidly disappeared after an amputation.

In Quénu's opinion operation should be performed as quickly as possible in order to prevent the elaboration of toxic products and their dissemination.

W. A. Brennan.

Cannon, W. B.: Wound Shock. *Mil. Surgeon*, 1919, xliv, 494.

This paper was a lecture to the officers of the Army Sanitary School at Langres, France, and was based upon studies at the Laboratory of Surgical Research, A. E. F., Dijon.

Wound shock is the same in all wounds of certain kinds, whether due to accidents in civil life or war injuries. Such cases exhibit, beside the local wound, a general bodily state, the state of shock, which is characterized as follows: the patient is cold, sweating, listless, and occasionally restless; the respiration is shallow, the pulse-rate rapid, the blood pressure low, and the skin pale. The most outstanding feature of this significant group of symptoms called "shock" is the low blood-pressure.

The theories to account for shock have been many. Reference is made to the following:

1. The low blood-pressure is due to exhaustion of the vasomotor center with relaxation of the arterioles. This view was held by Mitchell, Keen, and Morehouse at the time of the Civil War and is supported by Crile on the basis of observations upon nerve cells in cases of shock. Such nerve cells were subjected to low blood-pressure for a considerable time before the observations. As we know that of all tissue cells the nerve cells are the most sensitive to a lack of blood supply (temporary retardation of blood flow to the brain causes fainting), the question arises as to whether the nerve-cell changes are not the cause rather than a mere effect of low pressure.

2. Another theory, with considerable recent support, attributes shock to a liberation of fat, particularly in fractures of long bones, which produces pulmonary embolism. The result of such emboli in the lungs is assumed to be a decrease in the blood-supply from the right to the left heart and hence a fall of arterial pressure with its effects. Not debating that fat is liberated into the blood-stream, the author states that the anatomy of the lung shows ample capacity of the vessels there to supply the left heart in spite of the presence of massive emboli; indeed, half the lung area may be removed without interfering with the circulation Furthermore, the symptoms of fat emboli sufficient for circulatory disturbance (apnœa, etc.), are not seen in shock and the blocking of the circulation in the right heart with the resulting congestion in the systemic veins is also absent. In shock a needle finds the superficial veins with unusual difficulty because they are so collapsed. Finally, the approved treatment for shock, transfusion of blood, which has beneficial effects, is exactly contrary to indications if the cause be pulmonary embolism and venous congestion.

3. A third theory assumes that there is a loss of CO_2 from the circulating blood (the "acapnia" of Henderson) and that it is to this that the fall of blood-pressure is due. Pain is said to be the initial cause of the rapid breathing and the loss of CO_2, but in shock both the pain and this characteristic breathing are commonly absent. Hence this theory, like the others mentioned, lacks convincing proof.

4. Old observations made with no thought of shock in mind found that the first products of proteid digestion, the proteoses and peptones, are extremely toxic. These injected into the circulation will produce "peptone shock." Certain "lymphagogues" are known to act by so changing the capillary walls that the lymph escapes in increased amount. It is known also that injured tissue cells undergo digestion into products similar to those of normal digestion. Would not, therefore, a wound with its great tissue destruction be a source of toxic products causing increased permeability of capillary walls, a fall of blood-pressure, and constitutional changes? Records of experiments bearing on this are given.

A case of injury to the leg followed by pressure resulted in fatal shock which was not due to hæmorrhage. Another case, exactly similar, in which clips were placed on the blood vessels for thirty-five minutes after the injury, thus preventing the absorption of toxins, showed no fall of pressure, but promptly after the removal of the clips the pressure fell back to shock level. As before the injury the nerves to the leg had all been cut, connection with the central nervous system was severed and the shock could not be attributed to nerve impulses. Later the blood-vessels were tied and the original pressure regained. Such observations rationally suggest that shock is brought about by absorption of toxic products from injured tissue, these being carried by the blood-stream throughout the body.

Shock is, therefore, a toxæmia and distinguishable from the local injury. Delayed shock, familiar in this war—injuries followed by shock only after time enough for the absorption of toxins, as at the base hospitals and not at the front—has, in this, a logical explanation. Accordingly, a tourniquet applied to a severely injured extremity close above the wound would prevent fatal shock, and if amputation has to be done, should not be removed until after the operation. It has been noted that cases in which a tourniquet was applied for hæm-

orrhage the patients escaped the shock which the terrible laceration seemed to assure. This questions the judgment of instructors who advise releasing the tourniquet every twenty minutes to restore the circulation, especially in view of the cases cited in which shock followed only the release of the constriction.

Broken bone ends in lacerated tissues must be kept still to obviate further damage and toxæmia. In the recent war the Thomas splint has probably prevented shock in many instances during transportation simply by its fixation. Gas gangrene from various bacilli which are proteolytic in action is associated with shock, the action being biochemical like that of autolysis in dying tissue and liberating toxic materials from protein decomposition. The fall of blood-pressure below 80 becomes itself injurious, due to the decrease in the oxygen supply to the tissues and the resulting acidosis; the lower the pressure the more rapid the injury, and the longer the pressure the greater the injury.

The best treatment for critical low pressure is the transfusion of blood. This supplies the volume of fluid and increases the number of oxygen carriers. Therefore it is particularly indicated when hæmorrhage is present as well. Other fluids are good also, even if transient in effect: normal salt solution, glucose solution, gum-salt solution (0.6 per cent gum acacia in 0.9 per cent sodium chloride). Transfusion, or infusion, must be done early to get ahead of the damage to the vital medullary centers; otherwise the pressure falls back again as soon as the inflow ceases. This fact emphasizes the importance of resuscitation measures in warfare as near the front as possible. In addition to the measures mentioned fluid by mouth or rectum is of great value. Robertson has determined that 1,500 cubic centimeters (33 per cent of a man's blood-volume) can be added to the circulating blood in this way in twenty-four hours and maintained. Heat also is of extreme importance. Blood counts have demonstrated that in severe shock there is a capillary stagnation, the red count in the capillaries commonly being as much as 2,500,000 more than in the veins. This fact and the loss of heat from sweating, exposure, wet clothes, and lying upon the stretcher in a patient who is producing less heat than normally, demand artificial heat. Heat, rest, and morphine have saved many lives. Another fact that must be remembered in the treatment of such cases is that patients in shock are very sensitive to anæsthesia which further depresses a dangerously low pressure and induces acidosis. Ether inexpertly administered might be fatal where N_2O and O (the oxygen 25 per cent) preceded by morphine, in amounts sufficient to maintain analgesia rather than anæsthesia, would be successful.

F. W. PINNEO.

Fisher, W. H.: Myxoma. *Ann. Surg.*, 1919, lxix, 596.

Myxomata are tumors composed of a tissue which resembles none found in the normal adult organism. It is made up of well-formed isolated cells of a somewhat stellate appearance, giving off delicate processes. The individual cells are separated from each other by a matrix containing varying amounts of mucin which takes on a differential stain with thionin. In this matrix are large but thin-walled vessels. Many pathologists doubt the existence of a pure myxoma and contend that we should refer to myxomatous modification or degeneration of some form of connective-tissue neoplasm as a lipoma or chondroma with myxomatous change. While this must be admitted as regards most myxomata, there seem to be a few tumors which should be classed as entities. Ribert has described small pure myxomatous tumors of the endocardium. According to Ewing, pure myxomata cannot be differentiated into fibromata, lipomata, or other tumors. Dennis admits that myxomata do occur and believes that irritation leading to a chronic inflammation is an exciting cause in many cases as in the polypoid growths of the nose in patients suffering from chronic catarrh. Virchow reports myxoma of the labium which recurred and eventually produced many myxomatous metastases.

The author reports a myxoma of unusual size. The patient, a woman 50 years old, had noticed a small tumor on the right labium for five years. Its growth had been slow and it had never occasioned any discomfort except by its size. After removal it was found to weigh 7 pounds and measure 8 inches in diameter. Microscopic examinations of various portions showed it to be a typical primary myxoma. The author agrees with those who believe that a pure myxoma should be classed as an entity. The patient has had no recurrence at the end of more than a year and weighs 40 pounds more than she did before the operation.

GATEWOOD.

Kelly, H. A.: The Early Recognition and Treatment of Cancer. The Duty and Opportunity of the General Practitioner. *Therap. Gaz.*, 1919, xliii, 381.

The author states that we might briefly summarize the results of the past years of multiplied activities in the domain of malignant disease by saying that they have brought the subject of cancer prominently before the consciousness of the public and in this way have secured a more or less nation-wide cooperation in the discovery and treatment of many cancer cases in their early stages. Such early discovery and treatment of the condition saves thousands of lives yearly, and when ultimately the entire medical profession acts together in seeking out and securing prompt treatment for all early cases the lives of many thousands more will be saved. The general practitioner is urged to assume that a condition is malignant until the contrary is proved.

The most obvious of all cancers, as well as the commonest, are those which begin in the skin of the face and are called basal-celled epitheliomata. The

treatment of these face cancers consists in either radium or surgery, and when instituted early is most successful. Radium is preferable as it resolves the tissue back to normal without loss of substance or disfigurement. In the more advanced stages nothing can be done except to relieve the victim with opiates.

In cases of cancer of the lip it is also of the utmost importance to suspect at once the tiniest lesion which does not heal immediately, which breaks out repeatedly, or which remains fissured. Here, too, radiation or an early operation will save much sorrow and regret. The great urgency for immediate action in this group lies in the fact that as soon as the lesion assumes any size, and sometimes when it is insignificant, it jumps down into the glands of the neck where only a radical mutilating operation can reach it.

Mouth and tongue cancer must also be discovered early for successful treatment, for once the deeper tissues are involved the case is almost hopeless from every standpoint. Some tonsillar growths are very responsive to radium and some not at all. All, if malignant, are very poor surgical risks. The larynx, on the other hand, is a brilliant field for radium as sometimes even very advanced cases can be helped considerably.

Special emphasis is placed upon the urgency of treating seriously every little lump in the breast. Here surgery is the recourse, or rather surgery plus the microscope. The suspected tissue removed should not be thrown away but put at once into a 10 per cent solution of formalin and sent to a first-class pathologist for a report. The wide-mouth bottle with its 10 per cent formalin solution is just as essential a tool for the surgeon's kit as his knife or his needles and suture materials.

In cancer of the breast there is a surgical paradox to be proclaimed, namely, that while it is not in the best interests of the patient to treat any small growth or good operable risk with radium, nevertheless radium will sometimes do wonders in a very advanced inoperable case and is invaluable in recurrences and in preventing recurrences. If metastases are found in the lungs it is useless to radiate.

Hodgkin's disease is amenable to radium to an extraordinary degree. Lymphosarcoma, which from a surgical standpoint is utterly incurable, is easily dissipated by radium if treated early. Sarcoma of the testis, fatal through early metastases up into the abdomen, often gives brilliant results from radium and improvement even when far advanced.

The sum of the whole matter seems to be this: that greater zeal is needed on all sides in getting hold of cancer cases earlier and an equally greater zeal is imperative in getting them operated upon or treated with radium at an early date.

The paper is illustrated with fourteen cuts showing patients before treatment and after they have been cured by radium: two cases of epithelioma of the nose; one case of extensive epithelioma of the eye; one case of extensive epithelioma of the nose and inner canthus of the eye; one case of cancer of the lower lip; one case of Hodgkin's disease (cured locally); and one case of lymphosarcoma of the neck which has remained well for over five years.

Vries, W. M. de: The Formation of Metastases in Cancer (Over Metastase-Vormung bij Kanker). *Nederl. Tijdschr. v. Geneesk.*, 1919, i, 1068.

In a previous report the author stated that he found 518 cases of cancer in 3,700 autopsies. In the present report he takes up the question of metastases. In a total of 528 cancers of various parts of the body there were metastases into the liver in 156 and into the bones in 53. Metastasis into the lung tissue was not much more frequent than metastasis into the bones, i.e., in 66 cases only. Altogether there were 375 metastases in the 528 cases. It is possible that osseous metastases were more frequent as the whole skeleton was not examined.

The occurrence in several instances of multiple metastases suggests that they are formed by way of the blood-stream.

Metastases into the liver were most frequent in cases of cancer of the biliary passages (26 out of 36 cases). The same cases also gave a high percentage of lung and osseous metastases. Nineteen cases of prostatic and 17 cases of bladder cancer gave respectively 5 and 3 osseous metastases. Of 69 œsophageal cancers there were metastases into the liver in 18 and into the lung in 12.

The author believes that mechanical factors alone do not sufficiently explain the occurrence and variation in location of metastases of malignant disease. It is probable that cancer cells circulate very freely in the blood but die there quickly. In the organs in which metastases are rare, chemical factors may aid in their destruction, and this possibility suggests the treatment of cancer with extracts prepared from such organs. In the 528 cases of cancer examined metastases were found only 7 times in the stomach, 8 times in the kidney, and 7 times in the pancreas. In 12,730 autopsies, Kaufmann found 1,078 cancers, only 8 of which had metastases into the spleen. In these cases the primary lesion was abdominal or pelvic. However, experiments made so far with splenic extracts do not appear to have given any encouragement as the results were negative.

The comparison of various statistics shows that while primary cancer in certain countries varies considerably as regards the organ involved, the proportion and distribution of metastases are everywhere about the same for the same organ. This constancy in distribution of metastases, the exemption of the muscles, the extremely rare involvement of the brain, and the prevalence of metastases in the liver, bones, and suprarenals are matters for which no satisfactory explanation can be offered at present.

W. A. Brennan.

BLOOD

Harrop, G. A.: The Oxygen Consumption of Human Erythrocytes. *Arch. Int. Med.*, 1919, xxiii, 745.

The earlier work on the respiratory metabolism of the blood itself was in large part rendered valueless because of a lack of knowledge regarding the growth of micro-organisms, the effects observed being due merely to bacterial action. It has been shown by Warburg and by Morowitz and his pupils, however, that under certain circumstances each of the principal formed elements of the blood, leucocytes, erythrocytes, and platelets, has a measurable oxygen consumption.

Harrop explains there is now good evidence that the red cells in the circulating blood which appear reticulated when stained in fresh preparations with brilliant cresyl blue are young erythrocytes. The reasons for this belief are, in the first place, that increased bone-marrow activity, as indicated by a rise in the number of red cells and in the percentage of hæmoglobin, is accompanied by a parallel increase in the percentage of these cells in the blood; and, in the second place, that a large percentage of all of the red blood-cells in the bone-marrow without nuclei are reticulated.

The author has carefully studied the oxygen absorption in the blood of persons suffering from various types of anæmia and has compared it with the concentration of reticulated cells as well as with other abnormal findings in the blood in an effort to correlate the oxygen consumption, if any, which occurs in human anæmia with the other available findings.

The method used in estimating the reticulated cells was that of Robertson. This gives well-stained and well-distributed preparations. One thousand cells were counted in each case and the percentage determined therefrom.

For the determination of the blood-oxygen the blood-gas apparatus devised by Van Slyke was employed.

The following conclusions were drawn:

1. Normal mature human erythrocytes have no oxygen consumption measurable by present methods.

2. When measurably increased in the blood of individuals with anæmia, the oxygen consumption has no relation to the severity of the anæmia and no constant relation to histologic abnormalities in the erythrocytes other than increases in the number of reticulated cells.

3. Blood which contains abnormal numbers of reticulated erythrocytes has an oxygen consumption proportional to the percentage of reticulated cells present.

4. The data afford evidence that the two phenomena go hand in hand. Both are due to the presence of abnormal numbers of young cells, and both are probably rather accurate indicators of functional variations in the bone-marrow and the amount of blood regeneration.

G. E. Beilby.

Bond, C. J.: The Physical State of the Blood-Serum in Relation to its Agglutinin and Antibody Content: The Effect of Friction and Pressure. *Brit. M. J.*, 1919, i, 729.

This article is interesting from many points of view but especially because the author states that the blood-serum can be changed in its character by purely physical processes. Such simple processes as friction and pressure cause a marked change in the biological activity of the serum.

Hæmagglutinating sera are often kept by allowing the sera to dry on a cover slip. The author noticed that on redissolving these dried films they varied in their hæmagglutinating property, and that when solution was facilitated by stirring, the agglutinating properties were less active than when solution was allowed to proceed without aid. To investigate this phenomenon further he placed serum in a mortar and ground it with the pestle. This caused it to throw down a sediment. The sediment was allowed to settle and the clear supernatant fluid pipetted off. The liquid was designated as Liquor I and the sediment as Sediment I.

On subjecting Liquor I to another grinding, still more sediment was formed. Upon again separating the liquid from the sediment either by gravity or centrifuge he labeled this second liquid and sediment Liquor II and Sediment II respectively. By a third process of grinding he was able to produce further liquid and sediment which were labeled Liquor III and Sediment III.

After producing and separating the sediments and liquors the author was interested in the effect of such a grinding process upon the agglutinating properties of the serum. The power of agglutination he represents as follows: +, ++, +++, etc. It was found that a serum with an agglutinating power of + could be raised to an agglutinating power +++ in the second and third liquors. The specificity of the serum is not changed by this process. Any serum which was negative in its agglutinating power on certain red cells remained negative after the grinding process.

Simply allowing a serum to stand will increase its agglutinating power, but not so markedly as the grinding process. A serum with a mere trace of agglutinating activity showed a + reaction in seven days. The sediment had no agglutinating activity when suspended in normal saline and mixed with red blood-cells.

Transudates contain no free hæmagglutinin nor do their liquors, but their sediments do. The reaction is the same for ascitic fluid. Exudates show the same reaction as the serum. The cerebrospinal fluid reacts as a transudate. The specificity of reaction in transudates, exudates, and other body fluids frequently disappears when subjected to the grinding process. The secretions such as saliva, mucus, and milk show agglutinative properties after grinding, but they are not specific. In the saliva and mucus the property resides in the sediment. In milk it is in the liquors.

The normal excretions such as urine show no agglutinin in the liquors but the sediments show a non-specific agglutination. Even the cells of the individual secreting the urine are agglutinated by the sediment. Albuminous urine shows agglutination in the liquors as well as the sediment.

The complement in guinea-pig serum remains in the liquor when subjected to the grinding process, as does the complement-deviating power of syphilitic sera. Grinding a negative serum does not convert it into a positive complement-deviating serum.

Bacterio-agglutinins act in the same way as hæmagglutinins. They are found in the liquors and their activity is increased by grinding. The increase in their agglutinative capacity is specific.

J. L. Butsch.

Fleming, A., and Porteus, A. B.: Blood Transfusion by the Citrate Method. *Lancet*, 1919, cxcvi, 973.

The author prefers the citrate method of blood transfusion on account of its technical advantage and believes it is the general preference of men who have had considerable experience with the different methods. The results of this method do not differ from those of others.

The direct method has many drawbacks. It is difficult, necessitates cutting down on the vessels, and inflicts more damage upon the donor than is justifiable. By this method, moreover, the amount of blood given, which is of great importance, cannot be estimated. The syringe method is troublesome as in order to get the proper co-ordination it requires two operators who are accustomed to operating together. The Kimpton tube also necessitates cutting down onto the vessels. The citrate method avoids all these objections, leaves all the vessels intact, and prevents clotting.

Fleming uses the Moss method of selecting his donors, but points out that this is unnecessary when what Lee said in regard to transfusion is kept in mind. Lee pointed out that only one thing matters as regards compatibility of bloods of donors and recipients, i. e., whether the serum of the recipient will agglutinate the corpuscles of the donor. This can be determined easily by mixing the donor's corpuscles and recipient's serum. Three drops of the donor's blood in 1 cubic centimeter of a 2 per cent sodium citrate solution gives about the proper proportion. The serum of the recipient is obtained by drawing about 5 cubic centimeters of blood from the vein with a small syringe and placing it in a test-tube. After the blood-clots and the serum have separated, the latter is pipetted off into another clean test-tube. The test is then made on a cover slip. Two drops of the recipient's serum are placed on the slip and then one drop of the suspension of the donor's corpuscles. The two are well mixed, allowed to stand an instant, and then examined under the microscope, the cover slips often being placed on a hollow ground slide. If the corpuscles are evenly scattered over the field and no clumping of the cells is noticed, the donor is suitable. If, however, there is clumping and there are large clear spaces in the field, the donor's blood is unsuitable. In such cases another donor must be sought and tested out in the same way.

When many transfusions are made it is better to have the patients grouped. This may be done in a moment's notice if the serum of Groups II and III are at hand. The corpuscles of Group I are agglutinated by both sera. Those of Group II are agglutinated by Group III serum but not by Group II serum. Group III corpuscles are agglutinated by Group II serum but not by Group III serum. Group IV corpuscles are not agglutinated by either of the sera. Thus the blood of donors in Group IV may be given to any one, while that of donors in Group I can be given only to persons belonging to Group I, that of those belonging to Group II to persons belonging to Groups I and II, and that of donors of Group III to those belonging to Groups I and III. Eight per cent of people belong to Group I; 40 per cent to Group II; 10 per cent to Group III; and 42 per cent to Group IV. The most useful donors are those of Groups II and IV. The latter can give blood to all recipients and the former to 50 per cent of them.

The author uses the Robertson pressure bottle apparatus, which is described in detail. His work was limited mainly to cases of acute hæmorrhages and his results were excellent. He uses blood which he immunizes by placing into it small doses of vaccine and incubating for two hours. He tested the effect of the citrated blood on the coagulative power of the blood and found it did not modify it.

J. L. Butsch.

Lindeman, E.: Blood Transfusions without a Chill by the Syringe-Cannula System: Two Hundred and Fourteen Consecutive Cases. *J. Am. M. Ass.*, 1919, lxxii, 1661.

The author has devised a cannula which consists of three telescoping cannulæ. The smallest has a sharp end while the outer two are dull pointed and successively shorter. These cannulæ will fit any Luer syringe.

The complete apparatus consists of six 20-cubic centimeter Luer syringes, two tourniquets, two sets of cannulæ, one for the donor and one for the recipient, and three basins containing sterile normal salt solutions.

In the operation one operator draws the blood and then passes the full syringe to a second operator who administers it. The second operator then passes the empty syringe to a nurse who rinses it in normal salt solution. The cannulæ are left in place in the vessels of the donor and recipient throughout the procedure and the syringes are used repeatedly. By this method whole blood is administered by means of a minimum of apparatus in a minimum of time and without the use of anticoagulants.

Reactions in blood transfusions may be due to: (1) hæmolysis and agglutination, (2) toxic substances

developed in the blood during the time it remains outside of the body, (3) chemicals such as anticoagulants and sodium chloride, and (4) sensitization and anaphylaxis.

The author believes that with careful supervision of the tests for agglutinins reactions can be prevented by his method of transfusion. K. L. VEHE.

Galindez, A.: The Importance of Hypercholesteræmia in Biliary Calculus (Valor de la hipercolesterinemia en el suero sanguíneo en la litiasis biliar). *An d. Inst. mod. de clin. méd.*, Buenos Aires, 1919, iii. 225.

In a number of cases of operations for biliary calculus Galíndez found that the value of cholesterin in the blood varied from a maximum of 3.4 per cent to a minimum of 0.6 per cent. The high figure was obtained in the case of a patient in an advanced state of pregnancy. He concludes therefore that as hypercholesteræmia is not constant it cannot be considered as a sign of biliary calculus. There is no constant relation between the cholesterin in the blood-serum and that in the bile.

Seventy-one examinations for cholesterin in the blood-serum were made also in disease conditions other than biliary lithiasis. Varying amounts of cholesterin were found. Thus cases of catarrhal icterus showed cholesterin in amounts varying from 0.7 to 2.1 per cent and pulmonary tuberculosis amounts varying from 1 to 3.6 per cent. There is, however, no constant hypercholesteræmia in the majority of the diseases which disturb the functioning of the liver.

Of 16 patients operated upon for chronic appendicitis, either alone or associated with pericolitis, 10 showed hypercholesteræmia and 6 hypocholesteræmia.

Galíndez' study has disillusioned him with regard to the diagnostic value of hypercholesteræmia in cases of biliary calculus. His findings contradict those of the French school. There are other factors besides lithiasis capable of affecting the quantity of cholesterin in the blood-serum. One of these is possibly insufficiency or bad functioning of the glands of internal secretion. W. A. BRENNAN.

Larkin, J. H., Cornwall, L. H., and Levy, I. J.: The Technique for the Wassermann Reaction. *J. Lab. & Clin. Med.*, 1919, iv, 571.

The following technique is employed by the authors in performing the Wassermann test. In its essential details it is the Wassermann-Citron technique with certain modifications based upon the results of the more recent research in this field.

The total volume of the reactions is 2.5 cubic centimeters, being one-half the amount of the original volume used by Wassermann and his co-workers. Each ingredient is diluted in accordance with preliminary titrations, so that for the test 0.5 cubic centimeter of each ingredient is added. The figures given apply to the original Wassermann amounts, and for their application to the authors' work are divided by two.

Blood sera are sent to the laboratory on the afternoon of the day previous to that on which tests are performed. They are allowed to coagulate and stand at room temperature from one-half to two hours. The clots are then carefully separated from the sides of the tubes with a fine sterile wire and the tubes placed in the ice chest overnight. On the following morning the sera are poured off or pipetted from the clots, centrifugalization being resorted to only when the sera are not clear and free from cells. All sera are inactivated in a water-bath at 55 degrees centigrade for one-half hour.

The hæmolytic system consists of sheep cells and anti-sheep hæmolytic amboceptor derived from rabbits.

Corpuscles are obtained fresh from an abattoir on the day previous to that on which the tests are performed. The whole blood is collected in a sterile glass bottle, tightly stoppered and containing glass beads. It is defibrinated by gentle shaking for fifteen to thirty minutes. After defibrination it is filtered through twelve thicknesses of sterile gauze to remove any small clots of fibrin including cells in their meshes. The filtrate is placed in 15 cubic centimeter centrifuge tubes and centrifugalized four times at high speed. The first centrifugalization is for twenty-five to thirty minutes. The pure serum is then pipetted off and the cells well mixed with 0.9 per cent sterile saline. The second, third, and fourth centrifugalizations are for twenty-five, fifteen, and fifteen minutes respectively, the saline being pipetted off and fresh saline added each time. Samples of blood showing any hæmoglobin tinge in the supernatant saline after the third or fourth centrifugalization are discarded. The washed corpuscles are placed in the ice chest overnight, and on the following morning a 5 per cent suspension of the packed corpuscles is made up for titrations and tests.

Guinea-pig complement is obtained by bleeding to death from the carotid artery from three to five animals. Animals of average size weighing from 250 to 500 grams are selected when this is possible, and are not fed for at least twelve hours before the bleeding. Unnecessary excitement of the animals is avoided. The complement is obtained in the late afternoon preceding the day of the tests and it is allowed to coagulate at room temperature. The clot is separated with a small sterile wire, and the containers (15 cubic centimeter centrifuge tubes) are placed in the ice chest over night. On the following morning the serum is pipetted off and centrifugalized once at high speed until all cells are thrown down. It is then pipetted to another sterile container and placed in the ice chest until used. This usually yields a clear, yellowish serum. A slight hæmoglobin tinge is of no particular importance.

The anti-sheep hæmolytic amboceptor is placed in small, sealed, sterile ampules after inactivation

at 56 degrees centigrade for one-half hour. The ampules, each of which contains approximately 5 cubic centimeters, are kept in the ice chest near the ice. G. E. BEILBY.

BLOOD AND LYMPH VESSELS

Lozano: The Present Status of Arterial Surgery (Estado actual de la cirugia de las arterias). *Rev. españ. de cirug.*, 1919, i, 193.

Lozano reports the findings of a commission appointed to inquire into the recent developments in vascular surgery. The article includes a discussion on (1) arterial suture; (2) the treatment of aneurisms; (3) operations for assumed or confirmed arterial wounds; and (4) sympathectomy.

The technique of arterial suture has been greatly perfected, and owing to this progress healing can be obtained without coagulation or hæmorrhage.

The results which have been obtained so far in the experimental field, including work on lateral and circular sutures, anastomoses, and grafts, were obtained in cases in which the arteries were in a healthy condition. Such results have not been realized clinically.

The clinical indications for vascular suture have been reduced for the following reasons: (1) owing to the infection of the vessel-wall in cases of wounds; (2) owing to disease and degeneration of the arterial walls; (3) because in the majority of cases ligation gives the same results as suture without the danger of a subsequent hæmorrhage.

In the recent war suture was applied even to types of cases in which it appeared unsuitable. Ligation did not produce gangrene in more than 3 per cent of the cases although applied to arteries the condition of which was considered dangerous owing to failure of the establishment of collateral circulation.

In senile or atheromatous gangrene arterial suture is not applicable, owing to the diffusion of the lesions.

In circumscribed thrombosis suture is not applicable owing to (1) the difficulty of diagnosis and (2) the benefit obtained from expectant treatment.

The prevention of a solution of continuity in an artery by means of well-prepared grafts of limitrophic tissue is considered an excellent method since it provides a satisfactory safeguard against postoperative hæmorrhage.

In the treatment of aneurisms the Matas arteriorrhaphy is the method of choice.

The Matas arteriorrhaphy is recommended for aneurisms and not recommended for war wounds and thrombosis for the following reasons: (1) in every aneurism a collateral circulation is established for a long time, even in the wall of the aneurismal sac itself; (2) in wounds and thromboses such collateral circulation is not fully established and the operation will interfere with it; (3) the Matas arteriorrhaphy is not strictly an arteriorrhaphy but a postoperative plastic operation which prevents hæmorrhage.

Surgical operation in vascular wounds ought to be immediate and an exploratory operation should be performed when the presence of such wounds is suspected.

The sympathectomy of Leriche opens up a new field in the surgical treatment of neuralgias, gangrene, and contractures if the facts as published are true. W. A. BRENNAN.

Oudard: The Surgical Treatment of Aneurismal Hæmatomata (Traitement chirurgical des hématomes anévrismaux). *Arch. de méd. et pharm. nav.*, 1919, cvii, 346.

Oudard is an advocate of very early operation in cases of aneurismal hæmatoma due to war wounds. By the term "arterial hæmatoma" he means the effusion of blood following the complete rupture of an artery. If a sac is formed and its walls undergo a distinct fibrous or fibrocalcareous organization, this hæmatoma develops into a traumatic aneurism. Observations have shown that as a general rule a hæmatoma does not develop into an aneurism in less than twenty-five days.

The majority of surgeons are not in accord with the conclusion reached by the Interallied Surgical Conference with regard to early operation for such vascular injuries. Of 117 cases reported in the literature Oudard finds that only 30 were operated upon within twenty-five days and none within the first forty-five hours. The general impression is that establishment of collateral circulation should be awaited and that an immediate operation is very apt to be followed by gangrene. Oudard does not see that the ligation of an important limb vessel under such circumstances is more dangerous than ligation of the same vessel for an external hæmorrhage. By early operation in cases of hæmatoma the clots may be removed with facility, the compressed vessel freed, and the circulation actively restored.

Oudard's experience with early operations has been as follows: 9 early operations for aneurismal hæmatoma of the femoral artery with 2 cases resulting in gangrene; 5 operations upon the popliteal artery resulting in 2 cases of gangrene; 5 operations upon the axillary artery with 5 recoveries; 14 operations upon axillary and subclavian traumatic aneurisms with 14 recoveries; 28 operations upon traumatic aneurisms of the femoral artery resulting in 3 cases of gangrene; and 7 operations upon traumatic aneurisms of the popliteal artery with 6 recoveries and 1 case of gangrene.

By "gangrene" Oudard means total gangrene of the extremity of the limb, not a mere superficial gangrenous patch.

Delaying operation exposes the patient to infection, especially gas gangrene, severe secondary hæmorrhages, embolism, and disturbances due to increased venous pressure. Moreover, if the aneurism is permitted to develop it causes adhesions, nerve compression, etc. Many of these complications persist after a late operation.

In operating Oudard ligates both artery and vein.

In the many operations he has performed he has never had any real difficulty in finding the perforation, isolating it, and ligating the injured segment. These operations have been done within the first twenty-four hours and at the same time the thorough surgical treatment of the wound has obviated the danger of subsequent infection.

The simultaneous ligation of the vein in cases in which the artery alone is injured, re-establishes the equilibrium by creating an obstacle to the return circulation.

By early operation upon hæmatomata the traumatic aneurism may be excluded from the surgical pathology of war wounds.

Five case histories in which early operation failed are related with comments. W. A. BRENNAN.

POISONS

Covey, G. W., and Barron, M.: Pathology of (Mustard?) Gas Inhalation. *Am. J. M. Sc.*, 1919, clvii, 808.

According to the field medical cards, 35 of the 37 cases included in this study of the effects of gas inhalation were due to mustard gas alone, 1 to mustard gas and phosgene, and 1 to phosgene alone. In 34 cases the action of the gas on the respiratory tract was the main cause of death.

The first stage of the effect of mustard gas inhalation consists in mild œdema, hæmorrhage, beginning ulceration, early fibrinous deposit, emphysema, and very early bronchopneumonia. The second stage is characterized by a marked fibrinopurulent membrane, more extensive ulceration, emphysema, advanced bronchopneumonia, and beginning necrosis. In the third stage there is ulceration with necrosis and abscess formation and massive bronchopneumonia. The attempts at healing are revealed by the organization and fibrosis. P. G. SKILLERN, JR.

Fasiani, G. M.: On the Asserted Transformation of the Anaerobic Bacteria of Gas Gangrene (Sulla pretesa trasformazione dei germi anaerobic delle gangrene gassose). *Sperimentale*, 1919, lxxii, 459.

The author refers to an article published in 1916 by Conradi and Bieling in which they stated that the different anaerobic bacteria described as agents of gas gangrene do not constitute a distinct species but are transformation stages of a type of bacterium capable of undergoing important morphological and biological changes.

The author undertook a series of investigations of the bacteria isolated from cases of gas gangrene with a view to verifying or disproving the above assertion. By experimenting with the various anaerobic bacteria obtained from the tissues, etc., in cases of gas gangrene he found that it was not possible to discover any modifications of the morphological or biological characters of the distinct species by repeated cultures in human muscle, by passage through a series of different substances, or by animal inoculations. In the various experiments each species preserved its own fundamental characteristics unaltered. The very slight variations found in the forms of the colonies could not be considered modifications of any degree of importance. The author therefore concludes that the assertions of Conradi and Bieling have no foundation in fact.

The anaerobic bacteria which are found in the focus of gas gangrene may be divided into two main groups. The first comprises organisms endowed with a limited power of attacking protein but with a strong fermentative action upon the carbohydrates. In the second group are those endowed with a strong power to attack and split up proteins. The first group were shown by animal experimentation to be those which are mainly involved in pathogenic processes; the second group have little pathogenic action.

The variety of the bacteriological findings in the different muscles invaded by gas gangrene or in the same muscle group ought not to be regarded as due to transformation but solely to abnormality caused by more favorable environmental conditions.

W. A. BRENNAN.

SURGICAL DIAGNOSIS, PATHOLOGY, AND THERAPEUTICS

Van Hoosen, B.: Emetin Hydrochloride in Malignancy. *Woman's M. J.*, 1919, xxix, 101.

The author has administered emetin for malignant disease during the past year. Almost without exception the dose was 5 grains given intravenously or intramuscularly.

Thirty-five cases have been selected and their histories abstracted in this article as being those which best demonstrate the conclusions reached from a study of 100 cases treated in this way.

The author's summary follows:

Repeated intravenous injections of large doses (5 to 9 grains) of emetin in cases of malignant disease will result in: (1) the removal of surrounding infiltration; (2) fibrosis in the primary focus and in the metastases of adenocarcinoma and squamous-cell carcinoma; and (3) necrosis and subsequent absorption in epithelial or sarcomatous growths.

Ten grains of emetin administered at intervals in large or small divided doses subcutaneously or intravenously will control hæmorrhage from malignant disease.

Fifteen grains of emetin administered at intervals in large or small divided doses subcutaneously or intravenously will remove odorous discharges from malignant disease.

Twenty grains of emetin administered at intervals in large or small divided doses subcutaneously will mitigate or entirely relieve the pain of malignant disease.

Twenty grains of emetin administered in small or large divided doses subcutaneously or intravenously will produce a feeling of weakness, felt especially in the knees, and a tendency to tachycardia.

Small doses frequently repeated produce more serious disturbance than larger doses.

Large doses (5 to 9 grains) given intravenously may be followed by nausea, vomiting, or a chill, the reaction being either slight or severe but rarely lasting more than four hours and followed later (the next day) by a feeling of improvement.

To avoid severe reactions give emetin hydrochloride in 5-grain doses (put up in ampule form) and well diluted with 150 cubic centimeters of normal salt solution. Keep the finger on the pulse and interrupt the stream flowing into the vein at any change in the pulse or on the patient's complaint of dizziness or faintness. Fifteen to thirty minutes should be consumed in giving a single injection.

The primary focus may be treated with surgery, radium, the X-ray, or the cautery, according to the preference of the physician after the patient has had all or part of the emetin treatment.

If the primary focus is very large, remove as much of it as possible soon after the first dose of emetin.

The best time to treat primary malignant foci surgically is one week following a 9-grain dose, or three days following the second 5-grain dose, there being an interval of four or five days between the first and second 5-grain doses.

In cases of large malignant growths delay in removing the growth after the administration of one or two doses of emetin may endanger the patient's life by the absorption of devitalized protein.

The elimination of the toxæmia of malignancy is best accomplished through the intestinal tract.

After the second 5-grain dose of emetin, give the patient daily doses of fortified oil or Rochelle salts to control tachycardia.

One-thirtieth grain of strychnine sulphate given hypodermically during the intravenous administration of emetin may prevent a chill which may follow as a reaction.

Emetin treatment is not as satisfactory in recurrent carcinoma when thorough glandular removal was done in the original operative procedure as it is when the glands have not been disturbed.

In advanced cases of malignancy fistulæ often appear after the second or third dose of emetin.

The best results have been obtained by the administration of three 5-grain doses of emetin intravenously on the first, fifth, and tenth days respectively. Further emetin is not given for three weeks. At the end of that time two 5-grain doses may be given intramuscularly one week apart. The treatments are continued by giving two 5-grain doses intramuscularly one week apart each month until all evidence (clinical or microscopic) of malignant disease is removed. E. C. ROBITSHEK.

Winternitz, M. C., and Lambert, R. A.: Œdema of the Lungs as a Cause of Death. *J. Exp. Med.*, 1919, xxix, 537.

Œdema of the lungs is a frequent terminal event in the course of many diseases, both acute and chronic, and in such cases is commonly interpreted as the immediate cause of death. It constitutes, as is well known, a striking feature in poisoning by most of the noxious gases in modern warfare. It is, therefore, not surprising that in the clinical and pathologic reports of these fatal gas cases death should be regularly attributed to pulmonary œdema.

The question as to how œdema of the lungs may bring about death has long been discussed. The view generally accepted is that the fluid in the pulmonary alveoli interferes mechanically with gaseous interchange and that when this interference with respiration passes a certain critical point the patient dies of asphyxia; that is, he drowns in his own fluid. It is not the purpose of this paper to discuss the question as to how œdema of the lungs causes death, but rather the fundamental problem of whether the mere accumulation of fluid in the lungs is of itself a serious matter.

During the past two years an opportunity has been given the authors to study the effects of practically all the commonly used war gases under laboratory conditions. About 3,000 dogs and an equal number of other animals have been exposed to gas and then observed clinically and at autopsy. Particular attention has been given to the pulmonary œdema, which, as in man, is a fairly constant and, in many cases, a striking phenomenon of the gassed state. The observations, together with the results of some experiments upon what may be termed an artificial pulmonary œdema produced by filling the lungs of a normal dog with an isotonic salt solution, have led the authors not only to question the importance of pulmonary œdema per se as a cause of death, but to conclude that œdema of the lungs in general is merely an indicator of some underlying disorder and is rarely, if ever, directly responsible for the death of the patient or animal. These observations are summarized as follows:

Animals which die acutely from exposure to any of the gases of the respiratory irritant group, such as chlorine and phosgene, show at autopsy varying degrees of œdema of the lungs. Although this is regularly well marked in certain species (dogs for example), there are wide individual variations. In other species (rats and guinea-pigs for example), it may be a relatively inconspicuous feature, in spite of the fact that these animals are particularly susceptible to the gas. Likewise dogs which are killed before the action of the gas reaches its maximum effect show striking differences in the amount of fluid in the lungs and these differences do not harmonize with the variations in the symptoms manifested by the animals. Furthermore, many dogs which pass the critical forty-eight-hour period successfully and are classed as "recovered" often show, when killed, œdema of the lungs of greater degree than other dogs of the same experiment which succumbed.

The lungs of a normal animal may be filled with isotonic salt solution, thus producing an artificial œdema comparable to that found in the gassed state.

G. E. BEILBY.

Rabinowitz, M. A.: Acute Hæmatogenous Streptococcic Peritonitis. *Am. J. M. Sc.*, 1919, clvii, 797.

Acute hæmatogenous streptococcic peritonitis is the designation used by the writer for cases produced by a streptococcus infecting the peritoneum by way of the blood-stream without an apparent intermediary lesion of an abdominal viscus.

From the study of his eight cases the author concludes that an acute inflammation of the nasopharynx, particularly of the tonsils, served as the original focus from which virulent organisms reached the peritoneum through the blood-stream. Although these cases did not occur during an epidemic of streptococcic sore-throat, the throats and peritoneal fluids yielded an identical coccus. May not this organism (Streptococcus hæmolyticus), infect the human body just as in the epidemics, through milk and its products or by way of human carriers, handlers of infected dairy products, or those who have been in contact with cases of streptococcic angina?

As in only a few instances there was a history of pain in the throat or tonsillitis, it is possible that in these cases there had been no reaction on the part of the tonsils and the streptococcus gained easy access to the blood-stream. The absence of marked enlargement of the cervical nodes also was evidence of nature's failure to defend against systemic invasion. When the peritonitis followed a distinct anginal attack a period of well-being lasting three or four days frequently intervened before the sudden development of the symptoms of peritonitis.

The leucocyte count was very high, ranging between 25,000 and 64,000 and averaging 40,000. The abdomen was tender and moderately rigid all over. There was no marked distention, and careful examination only infrequently revealed evidences of fluid in the flanks. The patient rapidly passed into the terminal phase of peritonitis. Death occurred in from three to eight days of the onset of the peritonitic stage and was the result of cardiac and vasomotor collapse induced by a virulent toxæmia.

Blood cultures were taken during life in only four cases. A positive culture was obtained in only one. This was a pure culture of streptococci. The author believes cultures would be positive more often if they were taken at the very inception of the peritonitic process rather than on the second or fourth day thereafter as was done in his own cases.

At operation the peritoneal exudate varied from a thin, serofibrinous to a fibrinopurulent fluid. The peritoneal fluid yielded streptococcus hæmolyticus in pure culture in seven cases and in association with bacillus coli in one case.

Streptococcic peritonitis of the type described occurs in persons who have been previously healthy and almost exclusively in young females.

Following a discussion of the differential diagnosis the authors append abstracts of their case histories.

P. G. Skillern, Jr.

Pauchet, V.: The Pathogenesis of Chronic Intestinal Stasis; Arbuthnot Lane's Disease (Pathogénie de la stase intestinale chronique. Maladie d'Arbuthnot Lane). *Rev. gén. de clin. et de thérap.*, 1919, xxxiii, 257.

The radiological examination and operative findings in cases of stasis may have both a mechanical and physiological explanation, the physiological cause probably preceding the mechanical. Stasis may result from kinks due to serofibrinous bands around the intestine and constricting loops which partially strangulate it. However, cases have been observed in which such constricting bands were not accompanied by stasis and also cases of stasis without constricting bands. In any particular instance it is difficult to say if the exact cause of the failure to function is mechanical or physiological.

In cases of functional disturbance without bands or kinks physical culture, massage, hygiene, and the use of purgatives, with perhaps organotherapy, ought to be sufficient to overcome the condition.

In cases of obstinate mechanical resistance in which medical treatment fails surgery should be resorted to and should consist of a partial or total colectomy. The results from this operation are most encouraging.

Whenever it is impossible to explain general auto-intoxication or abdominal phenomena the physician should be guarded in diagnosing the case as chronic appendicitis, salpingitis, or other infective condition until he has submitted the patient to a thorough radioscopic examination after bismuth meals and until such meals have entirely left the small intestine, the cæcum, the ascending and transverse colons, and the end of the large intestine, and the time taken by the contents to pass through each segment has been noted. Often a series of three or four radioscopic examinations will be necessary before a diagnosis of chronic intestinal stasis can be made.

W. A. Brennan.

EXPERIMENTAL SURGERY AND SURGICAL ANATOMY

Merzbacher, L.: New Experimental Findings Regarding the Degeneration and Regeneration of the Peripheral Nerves (Nuevas investigaciones, experimentales sobre la degeneración y regeneración de los nervos periféricos). *An. d. Inst. mod. de clin. med.*, Buenos Aires, 1918, iii, 293.

In a first series of experimental investigations carried out by Merzbacher the left sciatic nerve of a sheep was sectioned, the two ends sutured with catgut, and the sutured part wrapped in a sheath made from a piece of the jugular vein cut from the same animal. The experiments had the following results:

1. The degeneration in a sectioned and invaginated nerve covered with a vein sheath is identical with that in a nerve which is merely sectioned.

2. In an invaginated nerve the formation of neuromata is reduced to a minimum.

3. At the site of the interruption of the continuity of the nerve there is an intense struggle between the tissues of different origin. The result of this struggle is manifested by the formation of a new tissue which has three different components.

4. Neoformation tissue originating from the parts forming the invaginating vein inhibits the formation of neuromata.

In a second series of experiments the sectioned sciatic nerve was sutured and invaginated into a piece of the jugular vein which was filled with cerebral substance. In these experiments it was found:

1. That by invaginating a newly cut peripheral nerve into a segment of vein filled with cerebral substance inordinate and abundant proliferation of degenerated nerve fibers was prevented. Such a procedure therefore would seem to be indicated in order to obviate the formation of neuromata which are very troublesome during the cicatrization of sectioned nerves.

2. That the injected cerebral substance has a tendency to organize rapidly.

In the peripheral parts of the nerves interrupted in their anatomical and functional continuity and which, according to Waller's law, ought unfailingly to undergo complete degeneration, the author found numerous cylindraxiles and nerve sheaths which were intact and had escaped degeneration. He found also that the parts of the nerve nearest the brain matter which was injected into the invaginated vein developed a more energetic vitality and resistance than the parts further from it.

From these findings the author believes that it is logically deducible that the experiments point out a new method of increasing the vital resistance of a nerve isolated from its trophic center and restoring its resistance to degeneration.

W. A. BRENNAN.

Smith, N. R.: Organ Extracts. *J. Lab. & Clin. Med.*, 1919, iv, 517.

In the course of a series of experiments the author had occasion to attempt to determine the fate of Vaughan's poisonous protein cleavage product when administered enterally to cats. The presence of the poison in the blood-stream was definitely established by heart punctures following its introduction into the stomach by a tube. By withdrawals of heart blood from a dosed cat at intervals of ten to twelve minutes, followed by immediate transfer of such blood to guinea-pigs intravenously, a wave of toxicity could be noted that rose to a peak in about one hour and then gradually faded away. This observation was carefully checked by the injection of normal cat's blood. Following the matter one step farther, it seemed in order to determine whether any of the poison could be recovered from the tissues of such an experimental animal after it had been repeatedly dosed with the poison. Alcoholic extraction of the tissues followed by appropriate after-treatment of the extract was the method of procedure.

The tissues of seven species of animals were extracted with alcohol and found to yield a toxic extract, and it is believed that the tissues of all animals if extracted in the same way would produce a similar extract.

It was found that the extract of the tissues of the cat, which may be considered representative of all other tissues, contained solids in solution varying from .47 to 1.83 per cent of the original tissue.

The extracts were acid in reaction with the occasional exception of the extract of stomach and intestine. Adjustment of the reaction to neutrality did not alter the toxicity of the extracts.

There was some evidence that the toxicity of the extracts could be modified by previous treatment of the animals, especially by fatigue. Inanition was without effect.

Ether does not extract the toxic substance from tissue. Drying and fine division of rabbit muscle followed by alcoholic extraction gave an extract of negligible toxicity. In view of statements that are to follow, it is not believed that the toxic agent was destroyed by the drying, but rather that it was rendered insoluble in absolute alcohol.

Ignition to a white ash of the solids in extracts prepared by the use of alcohol shows an inorganic residue of approximately 0.4 per cent of the tissue. Subsequent solution of this ash to the volume of the extract from which it was obtained, followed by injection, shows it to be always as toxic as, and in some cases more toxic than, the extract from which it was derived.

It was found that water could be substituted for alcohol as the primary extracting medium, and that a more toxic extract resulted. Further investigation of this extract showed that the total solids had been increased by the use of water about 8 per cent, and the inorganic residue by 50 per cent.

The increase in toxicity of the water extracts, as measured in terms of reduction in the size of the dose required to kill, was approximately parallel to the increase of the inorganic material in the extracts. The author therefore believes that the inorganic constituents of the extracts, in whatever form they may be, are responsible for the toxicity.

That the inorganic substances were in some sort of combination is indicated by the failure of dialysis to make any separation of organic and inorganic materials. Whatever is in the extracts dialyzed freely.

By repeated freezing and thawing the toxic portion of the extracts could be concentrated to a very small volume in the lower part of the container in which the extracts were frozen. Five or six freezings gave the maximum effect. The increase in toxicity of the lower concentrated portion was roughly equivalent to the increase of solids in solution. The lack of toxicity in the uppermost portion of such a frozen extract was almost absolute.

Boiling does not affect the toxicity of muscle extracts. The toxic agent of muscle extracts is not removed by passage through a Berkefeld N filter.

Pyrophosphate salts are highly toxic for guinea-pigs upon intravenous injection. By comparative tests between pure phosphate salts and the inorganic salts derived from the extract by ignition it was shown that the toxicity of the ash solutions was caused by their content of pyrophosphates.

The toxicity of rabbit-muscle extract could not be modified by treatment with serum, either with or without incubation. This statement applies to both serum from a normal animal and serum from an animal that had been repeatedly injected with the extract and might therefore have been immunized against the extract.

Rabbit-muscle extract is toxic for rabbits, but in a higher proportion per kilogram of weight than for guinea-pigs.

The attempt to immunize rabbits by successive small injections of extract shows that the effects of the extract by this manner of injection become cumulative and are exaggerated beyond what would have been produced by a single injection of the total dosage up to the time when the animal succumbs. While lack of protein material in the extracts forbids the use of the term "sensitization" as ordinarily understood, the whole phenomenon is typical of such a state.

The general trend of the experimental part of this work indicates that the toxic agent in tissue extracts is a stable chemical entity or entities. The evidence is sufficient to warrant the statement that the inorganic materials of the extracts, especially the phosphorus, in whatever form they may be are the toxic agents of tissue extracts. G. E. Beilby.

Archibald, E.: The Experimental Production of Pancreatitis in Animals as the Result of the Resistance of the Common Duct Sphincter. *Surg., Gynec. & Obst.*, 1919, xxviii, 529.

This paper deals with the problem of the causation of pancreatitis. It is generally believed that pancreatitis is due to gall-stones and that bile is forced into the pancreatic duct presumably by the impaction of gall-stones in the ampulla of Vater, but it is obvious that clinically the majority of cases do not admit of such an assumption as either no stones are present or if present are confined to the gall-bladder.

About six years ago the author began an investigation of the function of the sphincter at the outlet of the common duct which was described by Odie nearly forty years ago. In 1913 he demonstrated that it is possible to flood the pancreas with a solution passed into the gall-bladder through a cannula under a known hydrostatic pressure. The sphincter was found to be easily set into spasm by a rapid rise of pressure in the biliary system or the application of acid to the duodenal mucosa.

Resuming these experiments this year, but using ox and human bile which in some instances was infected and in others not, and sometimes included mucin and at other times was freed from its colloid constituents, the author was able to produce several types of pancreatitis. Chief among these were the acute hæmorrhagic form involving the whole organ (hardening, moderate necrosis, and fat necrosis) and a mild type with very slight swelling of the pancreas, but with fat necrosis. Consequently we are now able to assert that many cases of pancreatitis in man must be due to a disordered action, probably a spasm, of the sphincter of the common duct which forces the bile into the pancreas.

It was observed that the underlying cause may frequently consist in hyperacidity in the first portion of the duodenum, with or without duodenal ulcer. Prolonged fasting, alcoholism, gastric and duodenal ulcers, and hyperchlorhydria, with alteration in the bile due to inflammation and blockage of the cystic duct therefore represent the probable clinical basis for the occurrence of pancreatitis.

Lewis, M. R.: The Development of Cross-Striations in the Heart Muscle of the Chick Embryo. *Bull. Johns Hopkins Hosp.*, 1919, xxx, 176.

The results obtained by different observers in regard to the development of the cross-striations in muscle-fibers differ so decidedly that the question arises whether any one of the views presents the entire story. Even though the discussion be confined to the development of this structure in one organ and to one form, as, for instance, the histogenesis of the myofibrils in the heart-muscle of the chick embryo, it is found that although the papers published are few in number they differ fundamentally

In an effort to determine, if possible, the reason for these differences, a careful cytologic study of the development of the heart of the chick embryo was undertaken. For this purpose preparations of embryos varying in age from 10 myotomes to four days' incubation were made by a number of different methods. The astonishing outcome was that one particular procedure always resulted in the presence of complete cross-striations in the heart, whether in very young embryos (10 to 15 myotomes—about twenty-five to thirty hours) or in older ones (two to four days).

The author describes a number of experiments which show that the complete cross-striations can be demonstrated to be present in the earliest heart, i.e., about 10 myotomes or twenty-eight to thirty hours' incubation. In other words, cross-striations are already present at the age when certain observers demonstrate the appearance of granules, the formation of a net-work, the elongation of mitochondria, etc. from which they claim the cross-striated fibrils are derived later.

Thus it is seen that in the living cell cross-striations are present, but not fibrils. The cross-striations are very thin bands on the surface of the cell. They extend across the cell and are never in the narrow threads or fibrils. The fixation of the cell causes the formation of the surface layer into fibrils in which the cross-striations are drawn together into deeper bundles and thus become evident as sharply marked structures. In places where the pull on the surface

of the cell is such that the latter is not coagulated into fibrils, the cross-striations remain spread out as thin bands across the cell.

The complete cross-striations are present in the muscle of the heart of very young embryos (10 myotomes) much earlier than was supposed by other observers.

The physiologists have endeavored without success to formulate a theory based upon the myofibrils to account for the contraction of the muscle-cells. It is not surprising that such a theory has not proved satisfactory, at least in regard to the heart-muscle, since the structure upon which it was based is not a part of the living heart-muscle cell, but only of the dead cell. In other words, a cell containing the structure upon which it was attempted to build the theory is not capable of undergoing contraction.

G. E. BEILBY.

Davis, N. C., Hall, C. C., and Whipple, G. H.: The Rapid Construction of Liver-Cell Protein on a Strict Carbohydrate Diet Contrasted with Fasting. The Mechanism of the Protein-Sparing Action of Carbohydrate. *Arch. Int. Med.*, 1919, xxiii, 689.

The authors have been impressed with the great speed of repair of the normal liver following necrosis due to chloroform. Under such circumstances the formation of cell protoplasm proceeds with remarkable rapidity and exceeds any growth speed with which they are familiar. To illustrate: a healthy adult of 75 kilograms or 165 pounds body-weight will possess a liver weighing approximately 1,700 grams. A suitable chloroform anæsthesia during a fasting period will destroy one-half or more of this liver tissue, perhaps 800 grams. Under favorable circumstances complete repair can be effected in from seven to nine days—approximately 100 grams per day—although the most rapid regeneration would develop during the third and fourth days and might well exceed 150 grams.

Formation of new tissue at a rate of 100 or 150 grams per day means the construction of a mass of liver cells the size of the normal spleen or kidney every twenty-four hours. If this speed of growth should ever be attained by a malignant tumor it would give most astounding clinical histories—medullary cancers of the breast could grow to huge size in forty-eight hours, hypernephromata might attain their great size within a week or less, etc. Such speed of growth on the part of a neoplasm would most assuredly command the respect, if not the admiration, of the surgeon. Yet the normal liver is capable of this speed of growth in reparative processes and can repeat it at frequent intervals as experiments clearly show.

In regard to the effect of diet upon liver regeneration, it is stated that experiments completed in the authors' laboratory (unpublished) which deal with the regeneration of red blood-cells in anæmia would seem to indicate that under such experimental conditions carbohydrates may protect the body protein from autolysis or katabolism. It is not impossible that carbohydrates may have both functions and may at times spare the proteins at the source, or again, act by conservation of end-products. The liver-regeneration experiments reported, however, are submitted as positive evidence that under the conditions of the experiment the exhibition of a carbohydrate enables the body to build considerable amounts of new cell protein. This is positive evidence that carbohydrates do act by conservation of protein split-products.

In another paper the authors have undertaken observations on fat feeding under the same conditions and it will be noted that there are rather remarkable differences between liver regeneration as influenced by carbohydrates and as influenced by fat. The fat diet does not favor liver regeneration any more than does starvation. Evidently fat does not favor the conservation of protein split-products under the conditions of the experiment.

The results of the experiments are summarized as follows:

The curve of urinary nitrogen excretion of a dog makes a sudden rise after chloroform injury. The actual amount of nitrogen eliminated following the injury is greater in a fasting than in a sugar-fed animal. Furthermore, the curve of excretion often remains well above the starvation metabolism base line if fasting is continued after chloroform anæsthesia. If sugar is given the curve immediately falls even below the pre-anæsthesia base line.

Liver repair is much more rapid and complete on a sugar or high carbohydrate diet than it is on starvation. In fact, an injury of one-half of each liver lobule may be completely repaired in nine days on a sugar diet, but only 50 per cent repaired under fasting conditions.

This is convincing evidence that the "protein-sparing action of carbohydrates" in this instance is a true conservation of protein split-products. This evidence can not be explained as protein sparing at the source or as simple inhibition of protein autolysis or katabolism.

It is suggested that the liver may be the place in which this union of carbohydrates and protein split-products may be made permanent, whether the resultant products are to be used in the liver or elsewhere in the body.

G. E. BEILBY.

Davis, N. C., and Whipple, G. H.: Liver Regeneration Following Chloroform Injury as Influenced by Various Diets. The Mechanism of the Protein-Sparing Action of Fat. *Arch. Int. Med.*, 1919, xxiii, 711.

From the experiments performed by the authors it is clear that the liver will regenerate at maximum speed following a unit of chloroform necrosis if the animal is fed a diet rich in carbohydrate, a bread and milk diet, or an ordinary mixed diet. The diets which rank next to this optimum group may be the parenchymatous organs (liver and kidney) and meat, perhaps brain, although the latter is usually dis-

tasteful to dogs. Liver regeneration is rapid on such rich protein diets and more data may show that the optimum regeneration may at times follow the administration of such foods.

Thyroid fed in large amounts is known to favor tissue katabolism, but this does not favor liver regeneration and may even inhibit it. Under such circumstances the liver cannot take advantage of the protein split-products and conserve them for use in the construction of liver-cells. It will be of considerable interest to observe the effect of large doses of thyroid combined with carbohydrate, of small doses of thyroid combined with carbohydrate, and of small doses of thyroid with and without carbohydrate.

Fat feeding supplies the most interesting observation brought out in this paper. Sufficient data are presented to show that liver injury will be regenerated on a pure fat diet just as rapidly as during complete fasting. In other words, the fat does not contribute in the least to the tissue building in the liver. Several deductions may be made from this evidence when it is recalled that pure sugar makes possible rapid and complete liver repair. Both fat and sugar are burned as fuel in the body and are recognized as "sparing protein" in one way or another. It has been suggested in another paper that sugar must "spare protein" by conservation of protein split-products which are constructed into liver protoplasm. It is of course possible and even probable that sugar also is capable of "sparing protein" by acting at the source of protein katabolism and preventing this autolysis or tissue break-down. Fat obviously acts as a "protein sparer" not by conservation of end-products and reconstruction of new liver tissue, but by some protecting-action at the source of tissue katabolism.

The experiments reported mark out a clean-cut difference in the metabolism of fat and carbohydrate relating to protein construction and destruction. It may be that this reaction is limited to the peculiar conditions of these experiments, but the authors believe it may be applicable to general body metabolism. Surely the metabolism and cell repair of a large and important organ like the liver must play an important part in the body metabolism and give more than a hint concerning the reaction of other less rapidly functioning cells.

A general discussion of the experiments by the authors then follows. It is clear from the experimental data given that liver regeneration can be completed more rapidly on a diet rich in carbohydrate than on a very rich protein diet.

This applies to mixed diets like bread and skim milk as contrasted with lean meat diets. A decided difference is pointed out in liver regeneration as compared with serum protein regeneration. Kerr, Hurwitz, and Whipple found that serum proteins after considerable depletion were regenerated best on a rich protein diet, for example, meat. It is possible that the differences noted may be explained by inherent differences in the proteins which are being formed with unusual speed in the body. Certain foods may contain ingredients especially suited to construct a certain type of body protein but unsuited for another type of body protein. It is significant that an abundant mixed diet gives an optimum regeneration in such instances.

The difference in regenerative power between the parenchymatous organs and ordinary skeletal muscle noted may be only apparent. Pups were regenerated on liver and kidney, while adults were fed the muscle. There is a possible difference due to age. On the other hand, liver may be better than muscle because chemically more nearly the equivalent of the tissue which is regenerated. It has been shown also that the parenchymatous organs are more protective against chloroform injury than skeletal muscle when fed during the days preceding anæsthesia.

Thyroid may accelerate synthesis when given in small amounts with foods, as Janney suggested, but in the experiment here presented it was given in large quantities with no food, and the well-known action of increased metabolism with continued high nitrogen output and no increase in liver repair was observed.

The lack of repair on a fat diet is certainly quite striking when compared with the results with carbohydrates, proteins, and mixtures of the two. Fat under these experimental conditions has a very minor rôle in tissue building and apparently is limited to its dynamic function as a fuel in protein sparing.

The article is concluded with the following summary:

A diet of bread and skim milk gives the optimum repair following a unit chloroform liver necrosis. A similar reaction is to be expected with any mixed diet rich in carbohydrate. A liver necrosis involving the central one-half of every lobule (50 per cent of all liver parenchyma) will usually be repaired completely in from seven to nine days.

A diet of cooked skeletal muscle is not as favorable for rapid liver repair as the rich carbohydrate diet.

A diet of cooked liver or kidney is more favorable for rapid liver repair than a meat diet. This diet of parenchymatous organ tissue approximates the rich carbohydrate diet in efficiency of liver repair.

Beef extract given alone does not favor liver repair, which indicates that meat extractives are not particularly concerned in the reaction of liver repair.

Thyroid powder given in large doses with no food does not stimulate liver repair but does accelerate tissue katabolism and increased nitrogen elimination. This accelerated katabolism may even impede the liver repair which is to be expected in starvation.

Brain feeding is favorable to liver regeneration and repair. This diet approximates lean meat feeding in its favorable influence on liver repair. In this respect the brain diet stands in marked contrast to the fat diets.

Fat diets (vegetable oils, butter, lard, beef fat, etc.) do not aid in liver regeneration. The same repair is to be observed during fasting control periods.

The fat diet can spare the proteins of the animal at the source, but cannot act in conservation of protein material by taking an active part in reconstruction of new protein substance. G. E. BEILBY.

ROENTGENOLOGY AND RADIUM THERAPY

Watkins, W. W.: Chest Roentgenology in the Selective Service Examinations. *Am. J. Roentgenol.*, 1919, vi, 283.

The author conducted the roentgen examinations in 1,140 cases of suspected cardiac and pulmonary disease for the Medical Advisory Board No. 2 of Phoenix, Arizona, under the Selective Service Act. The majority of the men were examined by the fluoroscopic method alone except when there was a discrepancy between the physical and fluoroscopic findings. In such cases a plate was made.

The conclusions drawn are as follows:

In the examination of 1,140 drafted men for chest disease, the physical examination never revealed tuberculosis which was not also readily shown by the roentgen ray.

In 24 per cent of the 1,140 men examined the physical examination failed to reveal a disqualifying chest disease which was demonstrated by the roentgen ray.

In revealing the mere presence of tuberculosis or other disqualifying chest disease, the roentgen ray would be sufficient in itself, but to determine the presence of activity, physical examination is necessary.

In any thorough physical examination of the heart or lungs, the roentgen ray should be employed unless the examiner is willing to accept the risk of 20 per cent error.

Just why the physical examination which failed to detect the presence of tuberculosis in 20 per cent of the cases should be the deciding factor regarding the activity or non-activity of a lesion, the author does not state. W. A. EVANS.

Matson, R. C.: The Value of Chest Fluoroscopy. *J. Am. M. Ass.*, 1919, lxxii, 1887.

This paper, which is based upon the examination of 72,985 second-draft men at Camp Lewis, is to some extent a criticism of an article by Diemer and McRae (*J. Am. M. Ass.*, 1919, lxxii, 172) which was based upon the examination of 425 rejected men from the same series. Matson's criticism is that figures for "rejects" alone are misleading, that figures for roentgenologic findings in "accepts" should also be stated, and that a comparison should be made with the physical findings in the cases of the 425 "rejects."

From complete tables attention is called to selected items as follows: Of 1,500 men whose fluoroscopic examination report was "tuberculosis suspicious," 1,372 were accepted by refer examiners for full military service and 128 were rejected with unmistakable tuberculosis. Of 2,349 reported by the fluoroscopists as "with abnormality," 2,249 were accepted by refer examiners for full service and 100 rejected for chronic tuberculosis. Of 12,393 reported negative by the fluoroscopists, 27 had physical findings sufficient to justify a diagnosis of chronic tuberculosis and were rejected.

Rejections were made only by refer examiners, men of ripe experience in the clinical diagnosis of tuberculosis. No men were rejected upon the roentgenologic findings alone. Re-examination by the refer examiner was made in all cases in which there was any evidence suggesting tuberculosis in the history or in the clinical or fluoroscopic examination.

Matson claims that a careful physical examination generally predicts the roentgenologic findings. Roentgenologic findings alone are of little value unless interpreted by physicians having a knowledge not only of roentgenology but also of tuberculosis from a clinical and pathological standpoint. As compared with a careful physical examination, the fluoroscopic examination, even when made by an expert, occupies a place of secondary importance so far as the diagnosis of tuberculosis in military service is concerned. Matson expressly states that his report is not to be interpreted as a reflection on the ability of Diemer and McRae, both expert roentgenologists, but he believes that they claim more for fluoroscopy than it should be expected to yield. He writes "in a spirit of constructive criticism with a sincere desire to be fair to both the physical and the fluoroscopic methods of examination. Both procedures have their place and must be held there. Neither can supplant the other." D. R. BOWEN.

Bryant, F.: The Cancer Problem. *Boston M. & S. J.*, 1919, clxxx, 576.

The author disclaims an attempt to present anything new on the subject and gives merely an up-to-date summary for the lay and scientific mind. A brief statement calling attention to the antiquity of the disease precedes a discussion regarding the generally accepted theories as to its causation and course. The importance of early diagnosis is emphasized if successful treatment is to be instituted. Stress is laid on the value of radiotherapy properly used as an adjunct to surgical and medical treatment. Applied before and after operation, it reduces the malignancy, seals up the lines of metastasis, and gives the greatest promise of ultimate recovery and permanent cure.

ADOLPH HARTUNG.

Raulot-Lapointe, and Sorrel, E.: The X-Ray Examination of the Large Intestine (Exploration radiologique du gros intestin). *Presse méd.*, Par., 1919, xxvii, 289.

In X-ray examinations of the intestines it has been the author's custom for several years to give four bismuth test meals at regular intervals of about four hours, so that when the stomach is about to empty its contents into the intestine a new digestion begins. In this way the bismuth is con-

tinuously injected into the small intestine, and consequently into the large intestine, and it is sufficient to examine the patient twenty-two hours after the first test meal in order to examine him simultaneously for the results of meals taken eighteen, fourteen, and ten hours before. The method therefore gives a general view of all the large intestine and reduces the number of necessary examinations.

This general view of the large intestine which permits the determination of its length, the form of the different segments, and the relations of the parts to the surrounding organs is in many cases sufficient, but there are other cases in which the roentgenoscopic examination must be supplemented by orthodiagrams or radiographs. Orthodiagrams have unquestionable advantages and facilitate the interpretation of certain images. It often happens that the bismuth masses give shadows that are obscure owing to the superposition of different intestinal elements; by palpation under the screen the shadows corresponding to the different elements can be separated, and by orthodiagrams an interpretation of the images can be arrived at which the screen examination cannot give. Radiography alone shows only one moment of the intestinal action and does not indicate at all or indicates very imperfectly the nature or quality of the intestinal movements. Moreover, it very frequently furnishes deformed images, even when the most recent methods are used.

W. A. BRENNAN.

HOSPITAL, MEDICOLEGAL, AND MEDICAL EDUCATION

Allowing Improper Testimony to be Introduced Which Can Only Inflame the Minds of the Jury. *Peters vs. Howard, 206 Illinois App.*, p. 610.

In the case of Peters vs. Howard the court reversed a judgment against Dr. Howard and discussed a number of points which should be of interest to the profession at large. The plaintiff brought suit to recover for damages for injuries said to have been caused by the negligence of the defendant who had been retained to attend and treat her at childbirth. She stated that during his treatment he carelessly and negligently placed against her body and limbs hot water bottles, and that by reason thereof large areas of skin had been burned and ulcers had formed on her body and limbs.

The defendant filed what is called a "general issue," which is a general denial of all the allegations in the plaintiff's declaration. He filed also two special pleas setting up special defenses which were that the hot water bottles in question were not the property of, nor in the possession of, nor under the control of, the defendant and that the supposed negligences by the plaintiff alleged were not committed by the defendant nor by anyone under his control nor in his employ. The demurrer to these pleas was sustained, the court holding that the defendant could introduce testimony on these two grounds without the necessity of pleading them specially. The trial court admitted testimony that the attending physician had opened one of the blisters on plaintiff's limbs using a safety pin which he took from one of the bandages, the statement being: "Why, he unpinned her leg and took off the bandage and found a place he thought needed opening, and he took the safety pin and was in the act of opening the place with the safety pin, and she says, 'Hold on, you mustn't do that with no safety pin; he was not going to pick that sore with no safety pin on her.'" A motion to exclude this testimony was overruled.

The court in disposing of this question of error as urged by the appellant in this case states that the sole purpose of this evidence was to inflame the minds of the jury against a physician by showing that he was so careless in his professional work that he would use a brass pin just taken from the bandage about a wound to break the flesh of appellee. The admission of this evidence was erroneous and very prejudicial, it could not be remedied by instructions, and it was the foundation for a very improper, inflammatory, and prejudicial argument.

Another question was raised in this case because an instruction was given to the jury referring it to the declaration and stating in substance that if the jury believed the plaintiff had proven her case as charged in her declaration it should find the defendant guilty. The defendant's objection to this was that the declaration did not state a complete cause of action as it did not negative contributory negligence and therefore the jury was instructed incorrectly as to the law. The rule is well settled in Illinois that before a plaintiff can recover she must prove not only that the defendant was negligent and that such negligence was the proximate cause of the injury complained of, but also that she was free from negligence which would contribute to the injury; that is, that she carried out the doctor's instructions in regard to taking medicine and care of herself, etc. The court holds that malpractice cases are much the same as cases against a railroad company for injury to a passenger, and that in those classes of cases the plaintiff must show that she was in the exercise of due care and free from contributory negligence as a prerequisite to recovery. The judgment was reversed and the case remanded for a new trial.

J. A. CASTAGNINO.

Liability of Physician and Manufacturers of Ether. *Moehlenbrock vs. Parke, Davis & Co., et al. 169 Minnesota N. W. R.*, p. 541.

The case of Moehlenbrock versus Parke, Davis et al. in the 169th Northwestern Reporter 541, grew out of the following statement of facts. The plaintiff, a young man, went to one of the defendants for a tonsillectomy. One of the other defendants gave the anæsthetic using ether which was manufactured by the remaining defendant. The contention of the plain-

tiff was that the defendant physicians were negligent in administering the anæsthetic and that the defendant, Parke, Davis & Co. were negligent in manufacturing and placing on the market impure and dangerous ether.

From this statement of facts the peculiarly antagonistic character of the defenses to these allegations can be seen plainly. The defense of the doctors was that the administration of the ether was skillful and proper but that the ether was impure, while the defense of the defendant company was that the ether was pure but that it must have been negligently given. Because of this situation the trial court allowed the defendants considerable latitude in their examination of the witnesses. Complaint was made against the rulings which allowed the defendant physicians to express an opinion as to the cause of the death of the plaintiff's intestate, but the court held that this was not an error. The witness may express his opinion. The weight to be given that opinion rests with the jury.

The identification of the ether analyzed as that administered to the plaintiff's intestate and to another patient on the day following being sufficient, and there being sufficient evidence also to show that there was no change in the condition of the ether during that time, it was proper to allow the introduction of testimony showing the effects of this ether upon the patient during the operation on the following day.

People are sufficiently alike to justify the assumption that when a drug produces a marked result on one it will produce the same result when used on another, taking into consideration, of course, the age, physical condition, and strength of each. In fact, the entire practice of medicine and surgery is predicated upon this theory.

The defendant, Parke, Davis & Co., contended that the operating physicians were acting as the agents of the plaintiff's intestate and that therefore their negligence was also the negligence of the plaintiff's intestate. The court held, however, that this was not the law and that the negligence, if any, of the defendant physicians could not be held as the negligence of the plaintiff's intestate. The only joint enterprise was that of the defendant physicians, Moehlenbrock not being able to take any conscious part in the operation.

It was not necessary to prove that the defendant company had knowledge of the fact that the ether was impure. It was its duty to know before the commodity was placed upon the market that it was not impure and dangerous, and that impurities could not form in the container in which the ether was sold or shipped. J. A. CASTAGNINO.

GYNECOLOGY

UTERUS

Aza, V.: The Early Diagnosis of Cancer of the Uterus (Diagnóstico precoz del cáncer uterino). *Arch. de ginecop.*, 1919, xxxii, 97.

Aza sums up his article as follows: Every hæmorrhage, no matter how small, which occurs at times other than the menstrual period, warrants the suspicion of cancer, regardless of the woman's age. Particularly significant are hæmorrhages produced by coitus, those which occur a year or more after the menopause, and the sanguineous discharge which the Spanish women call "water from washing meat." The majority of hard excrescences of the cervix are cancerous, as well as those which are friable and bleed readily; also true ulcers of the cervix in which there is definite loss of tissue. If in any of these circumstances the practitioner is doubtful, no time should be lost before making a pathologic examination of a small piece from the cervix or uterine scrapings. M. M. MATTHIES.

Tuffier: The Enucleation of Fibroids and Pregnancy (Énucleation des fibromes et grossesse). *Bull. Acad. de méd.*, Par., 1919, lxxxi, 748.

Referring to Bar's recent communication on the subject of conservative cæsarean section, Tuffier reports a case of conservative uterine section for the removal of fibroids. When practicable this operation is always preferable to a mutilating hysterectomy.

Since 1900 Tuffier has performed 131 hysterectomies for fibromata and 135 enucleations with preservation of the uterus and ovaries. He considers enucleation always the method of choice. In 49 cases in which he began in this way, however, he was ultimately obliged to perform a hysterectomy.

Tuffier takes up the question of the removal of fibromata before, during, and after pregnancy. Before pregnancy in the cases of young women, enucleation should be preferred to removal of the ovaries or uterus. Three hundred of the author's 315 patients were between 35 and 50 years of age. In the cases of the remaining 15 he performed 3 hysterectomies and 12 myomectomies.

Subsequent pregnancies in several of these cases have shown that the uterine scar is not a source of trouble in a later pregnancy. Moreover, in the cæsarean operation for fibroma the uterine dimensions are less than in the obstetrical cæsarean and the scar has greater resistance.

The indications for operation for fibroma in the course of pregnancy are very rare. In Tuffier's 3 cases they were the same in all, i.e., the presence of a large, hard fibroma embedded in the lower pelvis and probably in the supravaginal part of the neck of the lower segment of the uterine corpus. In the case of one woman who was four months pregnant 2 fibromata which together had the volume of a fœtal head were removed after section of the uterus. The pregnancy continued and the patient was delivered of a living child after seven and a half months. In the other 2 cases of myomectomy with suture one patient aborted a week later. The pregnancy of the fourth continued but the final result is not known. Everything depends upon the position of the fibroma with regard to the uterine mucosa.

Tuffier concludes that when an operation is judged necessary for the removal of a fibroid, enucleation, when practicable, permits pregnancy and a normal labor.

In the course of pregnancy there are two courses to follow: (1) the pregnancy may be allowed to go on and the tumor removed later following a cæsarean operation; and (2) the fibroma may be removed at once. The latter course often causes abortion.

After labor, either natural or surgically induced, it is better to enucleate fibroids than to run the risk of another pregnancy complicated by new fibromata.

W. A. BRENNAN.

Adeodato, I.: Ligamentary Hysteropexy in the Treatment of Uterine Retrodeviation (Contribuicao ao estudo da hysteropexia ligamentar no tratamento dos retrodesvios do utero). *Brazil med.*, 1919, xxxiii, 89.

Adeodato believes that the shortening of the round ligaments, or ligamentary hysteropexy, is the most rational of all the methods employed for correcting retrodeviation of the uterus, and that the Alquié-Alexander-Adams technique by the inguinal route has never been surpassed from the standpoints of anatomy and physiology.

The same physiological advantages, however, can be obtained by the abdominal route when for the removal of adhesions or some other surgical reason the abdominal route is necessary. There are two methods of accomplishing this, i.e., the method originated in the United States by Gilliam and in France by Doléris and modifications of this operation.

As the original Gilliam technique offers the possibility of intestinal strangulation, the author prefers the modified technique which he describes. In one of his cases operated upon by the Gilliam technique a loop of intestine slipped down within the pocket formed in front of the uterus by the round ligament which was sutured to the rectus muscle. To prevent this, Adeodato now fastens the vertex of the loop of the round ligament to the side rather than to the median line in order to keep the fundus of the uterus away from the peritoneal incision and prevent the development of adhesions.

Certain cases of retroflexion require a complementary operation to correct the angle of flexion. This is applied to the isthmus in order that the fundus may not be brought too close to the sutured incision in the peritoneum.

As the surgical operation alone does not suffice to free the patient from all the effects of the retrodeviation, local and general treatment should be given both before and after operation.

W. A. BRENNAN.

ADNEXAL AND PERI-UTERINE CONDITIONS

Saint, C. F. M.: Pyosalpinx Containing a Round Worm. *Edinburgh M. J.*, 1919, xxii, 387.

Saint reports the case of a 16-year-old girl who was admitted to the hospital with continuous pain in the lower abdomen accompanied by bladder pain and delay in voiding urine, vomiting, and a rise in temperature. Menstruation had been regular, somewhat excessive, and painful.

On examination it was found that the pulse-rate was 84, the temperature 100, and the general condition good. There was rigidity of the right rectus and slight hypogastric tenderness. The vaginal findings were a bulging of the right fornix and displacement of the cervix to the left.

Following a diagnosis of infected cyst of the broad ligament, a midline incision was made. The operative findings were as follows: a recent pelvic peritonitis, omental adhesions, normal left tube and ovary, and distension of the right broad ligament by a tense, egg-shaped swelling which almost closed the true pelvis and pushed the uterus over toward the left. The broad ligament was incised along the upper border and the cyst shelled out of its bed. When ruptured the cyst was found to contain foul pus and a dead round worm 3½ inches long. Vaginal drainage was established and recovery was uneventful.

The author believes that the worm gained entrance through the vagina and os uteri. W. F. HEWITT.

Magery, R.: Fallopian Tube Incarcerated in a Femoral Hernia. *Med. Press*, 1919, cvii, 457.

The author reports the case of a multiparous woman, 38 years old, who had had a small lump in the groin for several years. Suddenly severe pain developed in the region of the lump. The tumor did not disappear when the patient reclined. When examined she had vomited twice and the pain had continued for eight hours. The general condition was good. In the right saphenous opening a rounded, tense tumor the size of a pigeon egg, tender to pressure nd without impulse on coughing, was palpated. At operation a right femoral hernia was found. The sac contained blood-stained fluid and 5 centimeters of the distal end of the right tube. The tube was red and shiny and could be dropped back into the abdomen only after nicking Gimbernat's ligament. The ring was closed by stitching the pectineus muscle to Gimbernat's and Poupart's ligaments. The patient recovered. W. F. HEWITT.

Bizat, A. R.: Ovarian Salvation vs. Ovarian Destruction. *Am. J. Surg.*, 1919, xxxiii, 134.

If the patient has but one ovary and is without issue, endeavor to conserve it until the possibility of issue is gone; if necessary, it may be removed at a later date. The same statement applies to all cases in which there is doubt, excepting in the presence of definite malignancy.

It is a hazardous risk to leave an ovary on one side and a tube on the other.

It is not always safe to remove both tubes, leave a part of one ovary, and inform the patient that she will be barren.

Under no circumstances should the ovaries be removed for mere prophylaxis.

EDWARD L. CORNELL.

EXTERNAL GENITALIA

Sweetser, H. B.: Vaginal Hernia. *Ann. Surg.*, 1919, lxix, 609.

The patient whose case is reported was a single woman, 21 years of age, who was employed as a waitress. Her only complaint was the presence of a swelling which protruded from the posterior wall of the vagina at the perineal juncture when she stood or strained, but which almost disappeared when she was lying down and relaxed. Although it was painful, she had suffered no sudden severe attacks of pain.

The patient had never been pregnant. The vaginal orifice was very much relaxed, and upon straining and especially when she was in the upright position, the posterior wall projected through it in the midline to the size of a small orange, exactly simulating a large rectocele. The perineum, however, was intact.

Under anæsthesia, examination of the rectum revealed that it was not prolapsed at all into the apparent rectocele and took no part in the formation of the swelling.

A transverse incision was made at the mucocutaneous juncture of the perineum, and a vertical median incision up the posterior wall of the vagina, the flaps being dissected back. The tumor wall, which was later found to be the peritoneum, was very thin and easily separated from the anterior rectal wall. After the dissection had been carried up to the level of the recto-uterine pouch behind the cervix, the sac was opened and a large amount of yellowish fluid drained off, estimated at about a pint. As it was then not possible to make out the conditions present through the incision already made, the lower field was abandoned at this point and the abdomen opened above the pubes.

The omentum was then found firmly attached to the uterus and broad ligaments. The tubes were absent. The ovaries were small and full of small cysts. When the omentum was detached, the coils of bowel separated, and the uterus drawn forward, an opening was discovered in the centre of the Douglas pouch, about 1 inch in diameter, through which the finger could be passed into the cyst below. There

was no cyst wall above. The opening was closed with sutures which included the sacro-uterine ligaments and the abdomen closed without a drain. Returning to the vagina, the sac was twisted into a cord, tied and cut off, and the levator muscles sutured over the stump. The redundant vaginal wall was then excised and the edges sutured.

The patient left the hospital three weeks later when the parts were firmly healed.

In seeking an explanation of the condition found, i.e., a hernial sac containing fluid but no intestine or other viscera, the author has come to the conclusion that at the operation for removal of the tubes the fibrous floor of the cul-de-sac was injured and at the same time a pelvic peritonitis had developed. This had formed adhesions between the coils of the bowel and the omentum, creating an encysted collection of fluid at the bottom of the cul-de-sac the pressure of which caused a pouching downward of the peritoneum. A year later, when the patient suffered a severe attack of typhoid, the tissues relaxed and allowed a protrusion of the hernial sac into which the bowel could not enter because of the adhesions which held them up. EDWARD L. CORNELL.

MISCELLANEOUS

Giacobini, G.: Thyroid Sterility (Esterilidad tiroidea). *Semana med.*, 1919, xxvi, 272.

Complete sterility may result from thyroid insufficiency. Two cases are reported. The first was that of a woman who had been married ten years. For the past few years she had suffered from menstrual disturbances—metrorrhagia which was repeated two or three times each month and headaches. Her condition was diagnosed as due to thyroid insufficiency. By means of organotherapy the menstrual function was regulated and after two months of treatment she became pregnant and was delivered at term without incident.

The second case was that of a woman who had been married eight years. Menstruation was abundant and hæmorrhagic. This patient also after treatment with thyroid extract became pregnant and was delivered at term.

The author states that he could cite a large number of similar instances of sterility traceable to thyroid deficiency, and that this should be classified as a special type of sterility. W. A. BRENNAN.

Barragan, D. M.: Pathologic Relations Between the Genital and Urinary Tracts in Woman (Relaciones patológicas entre el aparto genital y el urinario en la mujer). *Rev. de med. y cirug. práct.*, 1919, cxxii, 257.

Barragan's long article on the interrelations of the female genital and urinary tracts has been continued for several months. Any pathologic or even mechanical condition in the one is reflected in the other. In the concluding installment of the article the author points to the care which should be taken to avoid injury to the bladder in abdominal operations and especially when exerting traction on a tumor or treating an adherent growth. Dense adhesions may cause the bladder to become twisted and adherent to a tumor and it may be possible to identify it only by filling it with fluid.

Barragan has frequently been consulted by patients giving a history of bladder complications after hysterectomy. In the case of one patient who had had a hysterectomy the symptoms for which she was operated upon recurred and there was a persistent vesicovaginal fistula. Subsequently a calculus which had developed about some strands of silk was removed by lithotripsy. A similar operation was necessary some months later, due to the development of other calculi in the site where an injury inflicted on the bladder during the hysterectomy had been sutured.

A second similar case was that of a woman who had had an enormous ovarian cyst removed three years previously.

Barragan discusses the pyelonephritis of pregnancy and eclampsia. When in the latter there is a living fœtus two factors are involved: (1) the toxins from the fœtal metabolism, and (2) the defence of the maternal organism which produces substances to neutralize the fœtal metabolic toxins. When there is equilibrium between the two there is a harmonious homogeneous symbiosis, but when there is lack of equilibrium very marked disturbances often result, even in the early months of pregnancy—a pregnancy toxæmia manifested by irrepressible vomiting, etc. The various reactions of pregnancy follow, their character depending upon the amount of inequality between the two factors mentioned. These conditions clearly result from a disturbance in the normal relations between the genital and eliminating systems.

Physicians should be on guard to detect symptoms indicating such abnormal conditions as early as possible so that they may be able to strengthen the maternal defences. The use of Ambard's constant is one of the best guides. The study of two perfectly normal pregnancies at three and five months respectively showed this constant to be 0.062 and 0.074. As soon as a pregnancy toxæmia is diagnosed, prophylactic methods should be instituted.

W. A. BRENNAN.

Keen, W. W.: A Case in Which for over Thirty-Five Years a Woman Defecated and Urinated, and for Eleven Years Menstruated, by the Rectum. *Ann. Surg.*, 1919, lxix, 606.

The case reported is worthy of record as an evidence of the possibilities of surgery and especially of the fact that the rectum may be utilized as a common cloaca for the urine and the menstrual flow as well as for the fæces for an indefinite period.

The case was one of extensive and incurable vesicovaginal and rectovaginal fistulæ caused by sloughing as a complication of typhoid fever. Ultimately the author entirely closed the vaginal outlet.

At the time this case was first reported in 1876 only one similar case had ever been published. This was by Brown in 1864. In 1917 Peterson collected 38 similar cases and reported in addition 2 of his own. While Maisonneuve had performed the same operation in 1851 for the first time, he did not report it until 1889. Rose operated upon three cases in 1872, 1883, and 1886, one of which was reported in 1878 and the other two in 1903.

The author's case is the only one in which the condition was caused by typhoid fever. In 33 others in which the cause was stated 25 resulted from childbirth and 4 from operations for cancer. Closure of the vagina was successful except at the internal end of the remnant of the urethra. After several minor but unsuccessful operations the author excised this small remnant with entirely successful results. Fistulæ in the cicatrix broke out at intervals of 2, 19, and 8 years but were easily remedied. Thirteen years after the vaginal closure there was escape of urine. Digital examination by the rectum showed contraction of the rectovaginal fistula and the presence of a calculus in the vagina. The calculus was crushed with a curved hæmostatic forceps introduced through the rectum. At the time of her death at the age of 73 the patient had remained well, with the exceptions noted, for 35 years, and for 5 months after the closure of the vaginal outlet.

Norris, C. C.: The Menopause. An Analysis of Two Hundred Cases. *Am. J. Obst.*, 1919, lxxix, 767.

Menstruation being dependent upon an ovarian secretion, it is fair to assume that the menopause is due to a change in the ovary. This theory is borne out by clinical facts, histologic studies, and animal experimentation.

The generally accepted statement that the menopause is established at 42 to 45 is incorrect. Forty-six to 49 is nearer the actual age in the eastern United States.

Among normal women the age at which the menopause appears varies within wide limits.

The following conditions prolong the menstrual functions: child-bearing, marital relations, good nutrition and hygiene, city life, and education, while converse conditions tend to an earlier menopause.

Climate and race undoubtedly play a definite part in the age at which the menopause occurs but are probably of secondary importance in the United States.

Hereditary influence is in many cases a potent factor; in some families the menopause occurs early, in others late.

In the majority of cases, the chief feature of the menopause is not the cessation or diminution of bleeding but the neuroses. These frequently antedate any change in the menstruation and may continue for six or eighteen months after the final cessation of bleeding. The actual bleeding, however, is the barometer of health.

Normally the menopause is established without an increased loss of blood. When menorrhagia occurs an examination is indicated. Metrorrhagia should always be viewed with suspicion.

In about 90 per cent of absolutely healthy women the menopause occurs normally, but among average women fully 30 per cent present symptoms which call for a careful physical and gynecological examination.

EDWARD L. CORNELL.

OBSTETRICS

PREGNANCY AND ITS COMPLICATIONS

Parmenter, F. J.: Renal Affections Associated with Pregnancy. *N. York M. J.*, 1919, cix, 1080.

For practical clinical purposes the author never considers the kidney to be the site of a primary infection.

In this article kidney infections are discussed according to their etiology as follows:

1. Acute or chronic septic processes elsewhere in the body, including focal infections—infections in the teeth, tonsils, and sinuses, intestinal bacteræmia, cholecystitis, appendicitis, pelvic inflammation, and leg ulcers.

2. Bacteria, bacterial toxins, and other products of inflammation which reach the kidney either through the blood-stream, the lymphatics, especially those along the ureter, or the ureteral lumen.

Attention is called to the fact that bacterial injury to the renal parenchyma may be prevented by the bactericidal powers of the cells of the convoluted tubules, the transitory nature of the infection, and the low virulence of the bacteria. Factors which lower the renal resistance in the presence of infection are trauma, previous damage from infection, concomitant disease such as calculus, and marked ureteral obstruction, when the kidney suffers not only because of mechanical blocking but also from the culture medium afforded by retained urine.

Parmenter divides all cases of kidney infection into two types: (1) bacteriuria and (2) pyelonephritis.

Bacteriuria is recognized clinically by the presence of bacteria in the ureteral urine in the absence of any abnormal substance such as pus. Symptoms may be absent entirely or, if present, entirely urinary.

Pyelonephritis, either acute or chronic, is characterized by general, local, or urinary symptoms. The general symptoms are the same as those of any infection—chills, prostration, a rise in the pulse-rate and temperature, and leucocytosis. The local symptoms are such as are found in any abdominal infection. The urinary symptoms are referred to the bladder and consist of frequency and urgency of urination, tenesmus, and the passage of small amounts of turbid urine. Symptoms of renal colic are infrequent. The general and local symptoms depend upon the severity of the infection and the lack of drainage; the urinary symptoms point to the establishment of at least partial drainage.

The diagnosis of pyelonephritis is made from the history and physical examination, with a careful search for foci and detailed urological tests. The latter include chemical, bacterial, and microscopic tests on the separate urines, an estimation of the kidney function by a dye test, and a pyelographic study of the outline of the renal pelvis.

The cocci type of infection is more severe and will more often demand nephrectomy.

The less radical measures are:

1. Removal of the source of infection when possible.

2. Removal of any obstruction in order to limit the spread and virulence of the infection. The knee-chest posture for the pregnant woman is helpful and the ureteral catheter is often indicated. Stricture of the urethra is rare in the female but contraction of the meatus is found and may be relieved by dilatation.

3. The employment of every means to increase the patient's resistance.

4. Removal of all chronic foci early in pregnancy, especially if urinary symptoms are present.

Labor should be conducted with the least possible instrumentation so as to prevent an ascending lymphatic infection. Catheterization should be avoided unless absolutely necessary, but if it is needed, 1 oz. of saturated boric solution should be left in the bladder for its antiseptic effect. W. F. Hewitt.

Welz, W. E.: Pregnancy in a Case of Improved Sporadic Cretinism. *Am. J. Obst.*, 1919, lxxix, 655.

The patient, aged 36, began to get fleshy at 10 years of age. At 23, one year after marriage, she had a severe nervous breakdown, being in bed three months with marked delusions and illusions. Since then she had enjoyed good health. Her height was 63 inches, temperature 98.8, pulse 78, weight 189 pounds. Her weight had increased gradually since her twelfth year of age. She had a hearty appetite, normal urination, and severe constipation. The skin was dry, coarse in texture, and yellowish-gray in color; the face puffy, especially about the eyelids. The hair was coarse and gray, and its color had been the same for sixteen years. There was little hair under the arms or on the genitals but a few coarse hairs on the upper and lower lips. The root of the nose was slightly depressed, the lips very thick, and the teeth poor. The head was large, the fontanelles closed normally, and the head thrown forward when the patient was standing. The thyroid gland could not be palpated. The abdomen was globular, with a marked panniculus adiposus; above the pubes was a large, pendulous pad of fat. The legs and arms were also well padded with fat. The breasts were large and pendulous, being mostly fat with little glandular tissue. The legs and arms were noticeably short. The upper arm was 10 inches long, and the lower arm, 10 inches. The hands, which were 6 inches long, were stubby and broad.

The patient was delivered at term by cæsarean section because of a generally contracted pelvis. Recovery was complete. EDWARD L. CORNELL.

Potocki: Retroperitoneal Hæmatoma in the Course of Pregnancy (Hématome rétro-péritoneal au cours de la gestation). *Ann. de gynéc. et d'obst.*, 1918, xliii, 346.

Potocki states that as gestation often aggravates previously existing disease it may in this way favor the production of hæmorrhages in regions apart from the genital zone, although such cases are rare.

The case reported was that of a woman aged 35 years who was in her third month of pregnancy. While apparently in a state of good health, she was seized suddenly with alarming symptoms suggesting a severe internal hæmorrhage. On admission to the hospital it was thought that the condition was a ruptured ectopic pregnancy. A more detailed examination, however, disclosed the presence of a tumor in the left side of the abdomen extending from the upper part of the iliac fossa to the costal border. Owing to the patient's weakness it was at first thought best to defer surgical treatment, but as during the night she was again seized with the same symptoms, an operation was performed immediately.

The genital organs were negative. On pushing aside the intestines, however, an enormous violet-red mass was found in the retroperitoneal region. Before the operation could be carried further the patient died. Autopsy showed that the mass was an enormous hæmatoma under the posterior parietal peritoneum which had pushed up the pancreas and suprarenal capsule and had almost completely enveloped the kidney.

The author is of opinion that the pregnancy was in no way etiologically connected with the hæmorrhage, but that its co-existence may have favored it.

While the origin of the hæmorrhage was not explained by the autopsy findings, the author concludes that it originated in the kidney but was not due to a tuberculous lesion. The vessel most probably involved was the renal artery.

Diagnostically hæmatomata of the type described may be differentiated from those of an ectopic pregnancy by their situation. Surgical intervention is indicated in severe cases to assure hæmostasis and evacuation of the blood. W. A. BRENNAN.

Caturani, M.: To What Extent Must We Depend upon the Microscopic Examination to Support the Clinical Diagnosis of Ectopic Pregnancy? *Am. J. Obst.*, 1919, lxxix, 716.

Of 100 specimens of tubes or adnexæ removed after the clinical diagnosis of ectopic pregnancy, only 15 failed to produce positive microscopic evidence.

The rupture of the tubes, which is ragged and typical of the erosion of the chorionic cells, is almost pathognomonic of ectopic pregnancy. In forty-two cases of rupture, only one showed negative microscopic findings. In cases of complete tubal abortion and hæmatosalpinx of long standing evidence of pregnancy is very difficult to find. Considering the difficulty of obtaining microscopic evidence, the percentage of negative cases in the series submitted to microscopic examination is small.

The information derived from cases of hæmatosalpinx or hæmatocele considered to be due to other causes then ectopic pregnancy is also at times incomplete. The detailed and convincing observations of Freund, Schambacker, and Bazy are sufficient to demand at least the revision of the old teaching that hæmatosalpinx and hæmatocele are nothing but accidents of ectopic pregnancy (Veit). To avoid exaggeration it is best to accept the contention of Zweifel that it has been histologically proved that ectopic pregnancy is the cause of hæmatocele.

Unless a different etiological factor can be demonstrated in doubtful cases, the importance of the clinical data must not be underrated.

EDWARD. L. CORNELL.

Farrer, L. K. P.: An Analysis of 309 Cases of Ectopic Gestation in the Woman's Hospital in the State of New York. *Am. J. Obst.*, 1919, lxxix, 733.

In the ten years from Jan. 1, 1909, to Jan. 1, 1919, there were recorded in the Woman's Hospital 320 cases of ectopic gestation. The clinical history and the operative findings bore out this diagnosis, but as in eleven cases the pathologists did not find fœtal elements in the tissues, the author has not included these cases in his statistical study, believing with Cragin and Bovée that ovarian and tubal hæmorrhage of non-gestational origin cannot be differentiated from the hæmorrhage caused by an ectopic gestation except by microscopic examination of the tissues.

During the same decade there were 19,674 patients in the gynecological service of the Woman's Hospital of which 309 were cases of ectopic gestation, an incidence of 1.5 per cent.

Infection or mechanical alteration due to adhesions of the fallopian tubes predisposes to ectopic gestation.

The onset of symptoms of an acute attack occurs equally as often at the time of an expected period or just after a normal period as it does when a period is overdue.

Pain with or without bleeding is present in every case of ectopic gestation unless it is unruptured.

Tearing, lancinating pain is not as common in ectopic gestation as pain of a cramp-like or bearing-down character.

Unusual one-sided pelvic pain when associated with evidences of peritoneal irritation and fainting warrants the diagnosis of ectopic gestation.

The treatment should be operative in every case as soon as suitable hospital arrangements can be made, examination being deferred until the patient has entered the hospital if she is in a serious condition.

The end-results justify leaving the opposite tube in the abdomen at the time of operation unless it is positively diseased. EDWARD L. CORNELL.

Lowe, C. V.: Abdominal Pregnancy. *Brit. M. J.*, 1919, i, 767.

On September 18, 1918, a woman, aged 35, was admitted to the maternity ward of Sheffield Union Hospital. She stated that she had had four normal labors previously, that her last period had occurred in November, and that she had had "labor pains" for a week before admission.

The patient looked ill and anxious, and complained of a foul taste in her mouth. The tongue was dry and coated. The temperature was 99.6 degrees. The abdomen, which was enlarged up to the ensiform cartilage, felt very tense and was extremely tender; fœtal parts were very difficult to make out. There was a soft elastic swelling above the pubes. The uterine souffle was heard on the left side, but the fœtal heart sounds were not audible. The presentation was vertex, low down in the pelvis, and movable; the os uteri was represented by a small dimple immediately beneath the symphysis pubis. The urine was acid, specific gravity 1,022, and contained albumin.

A diagnosis of abdominal pregnancy was made and the abdomen opened. The uterus was found to be enlarged up to the size of a five months' pregnancy; the fallopian tubes were intact. A full-time dead fœtus was found to be lying in a bag of membranes which was attached to the left side of the broad ligament. The fœtus was extracted, the broad ligament clamped, and the mass removed. The placenta was attached partly to the pelvic colon and partly to the broad ligament, and in separating it a considerable amount of hæmorrhage occurred. As the patient's pulse became very feeble, the abdomen was closed as quickly as possible, the lower third of the wound being kept open by three long gauze drains. An intravenous injection of two pints of saline was given when she was put back to bed.

After operation the patient was incontinent, and did not retain glucose injections by bowel. On September 20 she had an attack of vomiting with distension of the abdomen. The gauze drains were removed on September 21, and a long piece of gauze soaked in flavine was inserted behind the uterus. There was a small quantity of lochia. On September 25 the temperature rose to 101.4 degrees. On September 27 a fæcal fistula developed, and a piece of membrane presented through the wound. An attack of phlebitis in the left leg, which began on October 10, had completely cleared up on October 28.

When the patient was discharged from the hospital quite well on Feb. 3, 1919, the wound was completely healed.

Dorman, F. A.: Two Cases of Abdominal (Ectopic) Pregnancy Operated upon Near Term with Living Children. *Am. J. Obst.*, 1919, lxxix, 782.

The first case was that of a woman 29 years old who developed a toxæmia and was treated in the hospital for three weeks without relief. Owing to the presence of several fibroids in the lower uterine segment, a cæsarean section was performed. Previous to the operation it was not known that the pregnancy was ectopic. The membranes were broken and the child extracted. As the bleeding was profuse, the sac was rapidly freed from the omental adhesions by ligature and cutting, and drawn up out of the abdominal cavity. It was then found to be connected with the right broad ligament of which apparently it was an extension. By clamp and ligature close to the base of the ligament, the sac was completely extirpated. Examination of the uterus showed that it was enlarged to the size of a three-months' pregnancy and there were four substantial fibroids in its posterior wall. A pedunculated fibroid about the size of a small grapefruit was attached to the left horn and another somewhat smaller to the right horn.

The uterine mass with its attached tumors was removed by clamps and ligature, leaving only the left ovary and the cervical stump. The broad ligament wound was sewed over with a continuous catgut suture, and after all bleeding had been controlled the abdominal incision was closed in layers. The child weighed 6 pounds, 14 ounces.

The second case was that of a woman who was seen by the author in consultation Sept. 28, 1917. The patient gave a history of sudden severe pain referred to the right side of the abdomen and was in a state of quite severe shock, as shown by a feeble, accelerated pulse. The condition had come on at night, and at first suggested sudden separation of the placenta. After the administration of morphine the pulse improved markedly. The patient was then about seven months pregnant. The last menses had occurred in February. During the second and third months there had been nausea and severe pain in the right side. At this time the patient had been in a hospital in a western town and had been told that she had an ectopic pregnancy and urged to submit to an operation.

On November 9, because of moderate albuminuria, she was sent to the hospital and kept on a careful diet. An operation was performed on November 17. The peritoneum was incised, exposing the fœtal sac which was found attached to the omentum by several light adhesions. The presenting portion of the sac was incised and the hand, passing through the placental tissue, seized the head and extracted the child. The child was a female, weighing 4 pounds, 11 ounces. The incision in the fœtal sac was closed with clamps and the sac drawn out of the abdominal cavity. The omental adhesions were cut between ligatures. After tracing the sac down to its origin in the left broad ligament, it was clamped off from the horn of the uterus and excised. Bleeding points were controlled by ligature. On the right side near the cæcum the sac was extensively adherent to the intestine. In the midst of this was a small mass of brownish blood clots which was obviously the cause of the attack

of pain and faintness that had occurred the previous month when the patient was first seen.

The sac was separated by blunt dissection from the adherent intestines and the clot removed. The hæmatoma was also walled in by the fundus uteri, which, moderately enlarged, extended upward in the right iliac fossa. A tear in the peritoneal coat of the uterus caused by the blunt dissection was closed with catgut, after which the abdomen was closed.

The postoperative history was excellent. The highest temperature was 100.6, but for ten days the pulse ranged above 100. On the twenty-third day the mother and child went home in good condition.

EDWARD L. CORNELL.

Davis, E. P.: Therapeutic Abortion. *Therap. Gaz.*, 1919, xliii, 389.

The writer holds that to justify the production of an abortion a condition must exist which renders the continuation of the pregnancy hazardous to the patient's life or is capable of terminating it. He finds the most frequent conditions demanding therapeutic abortion are the toxæmias of early pregnancy, pernicious nausea and vomiting, and inability to maintain the metabolism of the body. He would insist upon the most intensive observation of these patients by an intelligent caretaker so that there may be no error in computing the total intake and output and the total amount of nourishment retained for twenty-four hours. A precise record should be kept also of the general condition and symptoms. Accurate laboratory research including a nitrogen partition of a twenty-four hour specimen of urine will establish a positive diagnosis of toxæmia as all such cases show a profound disturbance in the nitrogen metabolism.

Heart lesions with evidence of decompensation are also held as furnishing grounds for therapeutic abortion. In discussing tuberculosis the author draws a sharp line between such infection acquired subsequent to pregnancy and an infection existing before pregnancy. In the former cases he believes the patient is more apt to respond to early treatment and that the pregnancy should be allowed to proceed as long as the improvement is noted. In the case of patients who were tuberculous before conception the pregnancy should be terminated at once. When religious belief or ecclesiastical authority would prevent the interruption of pregnancy, it is the duty of the physician to state the truth without reserve, placing the burden of responsibility for the final decision upon the conscience of the husband and wife.

As to the method, the author states that he prefers dilatation under nitrous oxide and oxygen, with solid dilators, curettage with a sharp curette followed by a uterine douche of 1 per cent lysol, and tamponade of the uterus and vagina with 10 per cent iodoform gauze. The packing should be removed in thirty-six to forty-eight hours when a free vaginal douche should be given. Subsequently the knee-chest posture is recommended and the administration of strychnia and ergot.

H. K. GIBSON.

Bar, P.: The Place of the High Cæsarean Section in Obstetrical Operations (Place qu'il convient d'attribuer a l'opération césarienne haute parmi les interventions obstétricales). *Bull. Acad. de méd.*, Par., 1919, lxxxi, 571.

Bar's study is based on his personal experience in 275 conservative cæsarean operations performed either by himself or his assistants. Because of the favorable results obtained he has been led to perform the operation in cases in which formerly he would have thought it inadvisable. He does not perform it however upon women who show even slight signs of infection, increase in temperature, or vaginitis. His rule is also not to operate during labor unless at the beginning while the membranes are still intact. In the last 97 cæsarean operations performed he operated in only one case after the woman had been in labor for twenty-four hours, only once after the membranes had ruptured, and nine times after the patient had been in labor less than two hours. The other 85 operations were performed before the appearance of the first pains.

Bar always operates with the patient in the Trendelenburg position and packs off the uterus. The uterine incision is made very high on the anterior surface and the ovum is extracted without rupturing the sac. The technique is simple. A buttonhole incision having been made in the uterus, the finger is introduced and the membranes stripped as far as possible. The uterus is then sectioned while the finger proceeds with the stripping of the sac. If the placenta is inserted low or in a cornu the sac may tear but the extraction should be carried out as usual. Bar no longer tampons the uterus. Experience has shown that secondary hæmorrhages are rare, and they occurred only once in the last 37 cases. In 22 of the 97 cases the operative hæmorrhage was little or nothing, in 10 it was considerable, and in 65 medium in amount. While in the author's opinion immediate hæmorrhage need not be greatly feared, he takes the precaution of injecting 20 drops of ergotine subcutaneously.

In only 2 cases was an extraperitoneal cæsarean section done. The claim that in the low operation the hæmorrhage is slight does not count for much according to the figures quoted by Bar. The more important claim that the infection is less apt to spread is very valid for those who operate by the high route without selecting their cases, but has little weight when the cases are carefully selected as in this series. Rupture of the uterine wall in a subsequent pregnancy is more to be feared after a low than after a transperitoneal uterine section. Such a rupture also depends on the suturing.

Of 97 patients operated upon by Bar by the high abdominal route during the past five years one had slight shock, one a tendency to intestinal occlusion, and others an increase in temperature, etc. All 97 patients, however, finally left the clinic well and able to nurse their children.

The mortality which thirty years ago was above 10 per cent is at the present time 2 or 3 per cent.

Experience continues to emphasize the fact that a cæsarean section should be performed only in non-infected cases and that no case can be regarded as uninfected when the woman has been in labor a long time and the membranes have been ruptured.

When performed in selected cases by skillful hands following a simple technique on women not threatened by infection, cæsarean section is an operation which gives an almost certain successful result for both mother and child.

Bar next takes up the question of end-results, i. e., postoperative adhesions and the possibility of future ruptures of the uterus. When the operation is performed upon non-infected patients the adhesions are slight and do not offer difficulty in future interventions. The risk from adhesions in these cases, therefore, is so little that it may be considered of secondary importance. With regard to subsequent rupture of the uterine wall in the site of suture, the author states that in 22 cases in which the cæsarean was repeated there was 1 perforation and in 21 a greater or less degree of thinning of the wall about the scar. It cannot be denied, therefore, that a notable thinning of the uterine wall is frequent, but this can be obviated to a great extent by care in suturing. The suturing should be wide and deep, the threads passing well into the mucosa. Infection is avoided by selection of cases. In Bar's experience a woman who has undergone a cæsarean operation is not exposed to any serious risk of uterine rupture.

The indications for the cæsarean section should be definite and the operation should never be performed in their absence. It is a serious surgical procedure but the results are very satisfactory when it is reserved for only those cases in which extraction by the natural route is clearly impossible or particularly dangerous.

Cæsarean section is legitimate in all cases: (1) when an obstruction arising from the bony pelvis or the soft parts indicates that expulsion will be difficult and that a forceps extraction or extraction after version will be necessary, and (2) when some accident renders a rapid termination of the pregnancy or labor particularly desirable before natural labor sets in. Common to all indications is the reservation that the operation should be performed only when there is no risk of infection.

In the final part of his article Bar discusses some of the accidents threatening pregnancy and labor, such as placenta prævia, eclampsia, etc.

W. A. Brennan.

Conaway, W. P.: Cæsarean Section for Unusual Conditions. *Am. J. Obst.*, 1919, lxxix, 778.

The first patient, a primipara 41 years old, had had peritonitis for ten days due to acute appendicitis. Attempts at vaginal delivery had been made unsuccessfully. The classic cæsarean section was then performed with the delivery of twins. For a week after delivery the patient had chills and a fever of 104 degrees. Drainage of a cul-de-sac was followed by recovery and the discharge of the patient twenty-seven days later.

The second case was that of a primipara 35 years of age who had intestinal obstruction with a temperature of 101 degrees due to appendicitis and salpingitis with no free pus. After cæsarean section the convalescence was stormy for one week. The patient was discharged in one month.

The third case was that of a woman, a primipara aged 30. Cæsarean section was required because of a breech presentation in which the head failed to pass the inlet. After several attempts to deliver the child, it was thought better to perform a cæsarean section even if the fœtus were dead, rather than a decapitation, because it was quicker and safer. A gauze drain was left in the uterus. The patient was discharged from the hospital in three weeks.

The fourth patient, 20 years old, who was also a primipara, was operated upon for eclampsia. The convalescence was normal except for a phlebitis which lasted ten days. Edward L. Cornell.

LABOR AND ITS COMPLICATIONS

Ramsay, B. L.: Twilight Sleep: Its Present Status. *Illinois M. J.*, 1919, xxxv, 297.

Twilight sleep has been successful in the hands of some and a failure when used by others. Authorities are about equally divided for and against it, but all agree that it has an element of danger for the fœtus.

The condition is induced by the use of morphine sulphate and hyocine hydrobromide. Narcophin is claimed by some to be less toxic than the former. The object of the procedure is to produce analgesia plus amnesia, an ideal state not always attained. To determine the degree of analgesia plus amnesia possible in the mother without grave risk to the fœtus, the susceptibility of the patient to the drug, the condition of the fœtal heart, and the degree of pain present must be determined. The indications for twilight sleep are: (1) nervousness, (2) cardiac lesions, and (3) slow and excessively painful dilation of the cervix. The doses of the drugs recommended are, morphine sulphate 1/6 grain, hyoscin hydrobromide 1/100 grain, and atropine sulphate 1 to 1/180 grain, given subcutaneously, the hyoscin being repeated.

The first dose is administered when there is great pain, providing the dilation is the width of two fingers or more, so that manual dilatation and forceps delivery can be resorted to if necessary. As soon as the effect of the first dose begins to wear off the second dose is given after careful examination of the condition of the fœtal heart. When effects on the fœtal heart are noticed forceps are used at once.

Twilight sleep seems to have no effect upon postpartem contractions or hæmorrhage and does not delay recovery. Many of the babies are drowsy, especially if delivery is completed within three hours of the first injection. The lack of muscle assistance is counterbalanced by the relief of suffering, but the necessity for the application of instruments, especially

low forceps, is more frequent. Labor is materially lengthened in only a few cases. This method of delivery is not recommended as a routine procedure.

F. H. HARMS.

Icasalegui, M. P.: Two Cases of Acute Pulmonary Œdema during Labor and in the Puerperium (Dos casos de edema agudo del pulmon en el parto y alumbramiento). *Guipúzcoa med.*, April, 1919 (from abstract in *Med. Ibera*, 1919, vii, 1491).

The first patient to whom the author refers suddenly showed an expression of extreme anguish during the expulsive period. The respiration became rapid and stertoric and was accompanied by the expectoration of a serosanguineous liquid. The uterine movements were paralyzed. In view of the alarming situation the author applied the forceps at once.

After the extraction of the fœtus the symptoms of œdema re-appeared but subsided upon the withdrawal of from 300 to 400 grams of blood.

In the case of the second patient who showed similar respiratory difficulty the author immediately withdrew about 400 grams of blood with an instantly favorable result.

The cause of the pulmonary œdema was neither in the lung nor in the heart and the urine showed nothing abnormal on analysis. In the case of the second patient the sphygmomanometer demonstrated that the cause of the pulmonary œdema was arterial hypertension.

These cases led the author to the following conclusions:

1. The only valid treatment for acute pulmonary œdema, whatever its cause, is a general blood-letting to the extent of 300 or 400 grams.

2. Suction and cupping appliances do not act sufficiently in cases of œdema and such methods should be employed only when blood-letting is contra-indicated.

3. It is the duty of the obstetrician to examine and prepare the patient carefully so that if blood-letting is necessary she may be in the best condition to struggle against the complications which may follow.

W. A. BRENNAN.

Anderodias, I.: Fibroma of the Lower Uterine Segment and Spontaneous Labor (Fibrome du segment inférieure de l'uterus et accouchement spontané). *J. de méd. de Bordeaux*, 1919, xc, 167.

The patient in the case reported was a woman 41 years old, a primipara, with nothing of particular interest in her history. Except for the four previous years, her menstruation has been very irregular. The woman came to the hospital in labor, presenting in the lower pelvis a tumor which was apparently the cause of a dystocia.

On examination a tumor the size of a large fœtal head and quite distinct from the fœtus could be felt easily in the lower part of the pelvis. The diagnosis made was "sessile fibroid complicating labor."

While at first it seemed that a spontaneous delivery under such circumstances would be impossible, the author determined to await further developments. After five hours the midwife in charge informed him that in spite of energetic contractions the labor did not progress. He therefore decided to perform a cæsarean section. His examination of the patient, however, did not corroborate the midwife's report as he found that instead of being entirely pelvic as before the tumor had moved into the left iliac fossa. It had been pushed up and to the side. The fœtal head had also become turned toward the cavity. Under these circumstances the author determined that there was every possibility of a spontaneous labor and therefore deferred operation. After a few hours more dilatation was complete, the head engaged, and the child which weighed 2,850 grams, was born after a period a little longer than five hours.

In such cases the tumor may be pushed down through the vulva by the fœtus or upward and to the side as in the case reported. According to the author the latter occurs as the result of two factors both due to the uterine contractions: (1) the elongation of the inferior segment of the uterus, and (2) the dilatation of the cervix.

Such ascension of a fibroma may take place in the final months of pregnancy. The cervical dilation draws the tumor toward the periphery of the pelvic cavity where it sometimes slides into the iliac fossa, leaving the passage free for the fœtus.

A contingency such as that described, however, must not be awaited too long. If after a reasonable delay the tumor shows no tendency to move, and especially if the fœtal heart sounds begin to weaken, a cæsarean operation must be resorted to without further delay.

In the case reported the placenta and membranes were expelled forty minutes after the birth and there was no hæmorrhage. The woman left the hospital eight days later in good condition and by that time the tumor had very greatly diminished in size.

W. A. BRENNAN.

Rongy: Intrapartum Rupture of the Uterus. *Am. J. Obst.*, 1919, lxxix, 824.

The patient, a primipara 32 years of age, had a negative family and personal history. She became pregnant fifteen months after her marriage and expected to be delivered Aug. 2, 1918. On August 4 she was sent to the hospital because of vague pains. These pains, which were irregular, lasted about three hours, then ceased, and did not recur until the following morning. About noon on August 5 the author was called in consultation.

At that time the patient was somewhat shocked and her pulse, which was of fairly good quality, was 115. The pelvic measurements were normal. No fœtal heart sounds could be heard. On vaginal examination the head was found to be engaged in the pelvic inlet and the cervix undilated. Abdominal examination revealed peculiar unevenness of the uterine mass and some fluid in the flanks.

On opening the abdomen both legs of the infant were found protruding into the abdominal cavity through the fundus of the uterus. The rent was irregular and extended from side to side across the upper margin. The child and placenta were quickly extracted, the body of the uterus was amputated at its middle portion, drains were inserted in each cul-de-sac, and the abdomen was closed. The patient rallied from the operation but later developed sepsis and died on the fourth day. The removed portion of the uterus was sent to the laboratory where no changes in the uterine wall could be found which would account for the rupture.

EDWARD L. CORNELL.

MISCELLANEOUS

Romero, J.: The Characteristics of the Pelvis of the Peruvian Woman (Contribución al estudio de las caracteristicas de la pelvis de la mujer peruana). *Crón. méd.*, Lima, 1919, xxxvi, 118.

From 1914 to 1917 inclusive the measurements obtained of the pelves of 1,116 parturients examined in the author's obstetrical clinic showed that 12.66 per cent had abnormal pelves. This is about the same as in other countries. The conjugate vera was never less than 7.5 centimeters.

The author believes that this study of the Peruvian female pelvis is of interest not only from a scientific standpoint but also because foreigners in dealing with Peruvian pathology have based it on incorrect data. Similar data has been compiled in other South American countries.

The author gives in detail the typical measurements of the pelvic dimensions compiled during the last four years. Many of these women had had normal labors despite varying degrees of pelvic abnormality.

W. A. BRENNAN.

Lowenburg, H.: Hæmorrhage of the New-Born; Blood Transfusion Via the Longitudinal Sinus; Recovery. *J. Am. M. Ass.*, 1919, lxx, 1615.

The author reports the case of a baby girl, two days old, who was admitted to the hospital while bleeding profusely from the mouth, nose, and rectum. The cause of the hæmorrhage was indeterminable. The following day about 80 cubic centimeters of whole blood were transfused directly from the donor into the longitudinal sinus. A second transfusion proved to be unnecessary. In almost one month's time the hæmoglobin increased 60 per cent.

E. C. ROBITSHEK.

Laase, C. F. J.: Narcotic Drug Addiction in the New-Born. *Am. Med.*, 1919, xiv, 283.

Laase reports the case of a woman 27 years of age, of good general and physical condition, who was addicted to opiates for over two years and had an uncomplicated and uneventful pregnancy. Its course was uninfluenced so long as an opiate drug was supplied in quantities necessary to maintain her free from the symptoms of the withdrawal of the narcotic or body need for opium. Labor was accomplished when she was practically in a condition of drug need. When it was finally completed, she was in a highly excited state, very restless, and suffering from the usual distress of opiate need. Just before the final pain she attempted to jump out of the window to end the misery of combined labor pains and opiate deprivation. The labor pains were very energetic and delivery was accomplished with little difficulty.

The baby was a well-nourished child which appeared healthy but from the moment of birth was very restless. Symptoms and signs of drug need developed in the infant which were identical with those of the mother both in character and sequence. The restlessness increased and the child began to yawn and sneeze. Its face became pinched and its color poor. It drew up its legs and cried out as if in pain. Its pupils became widely dilated. The chin was in a constant tremor. Finally diarrhœa began and there were signs of collapse with general convulsions.

Nothing seemed to alleviate these symptoms until a drop of paregoric in water was given. They then disappeared in proportion to the amount of drug administered, those which developed last going first.

When the administration of the opiate was delayed the symptoms developed at intervals of about eight hours, their severity varying with the length of the delay. After lactation was established the necessity for the paregoric ceased as the narcotic was supplied through the mother's milk. Just before the nursing time the child displayed a restlessness unlike that seen in normal children. Immediately after nursing this subsided. Reduction in the opium intake in the mother was reflected immediately not only in her own physical condition but also in that of the nursing infant. It seems to the author that the manifestations were purely physical and explained by Bishop's theory of the production of an antidotal toxic substance rather than by psychiatric or psychologic approach.

F. H. HARMS.

GENITO-URINARY SURGERY

ADRENAL, KIDNEY, AND URETER

Sharples, C. W.: Ruptured Cystic Kidney. *Northwest Med.*, 1919, xviii, 109.

Sharples reports the rupture of a monocystic kidney in a man under 30 years of age which occurred while he was wrestling. The onset of pain was immediate and intense. The symptoms were those of rupture of an intraperitoneal viscus, but operation failed to reveal it and the abdominal incision was closed. The right kidney was then exposed through a lumbar incision, drainage was instituted, and recovery was uneventful save for phlebitis in the left leg. The marked symptoms of shock and pain are attributed by the author to the effect of the rupture upon the sympathetic nervous system. The cyst contained approximately one pint of fluid.

J. S. EISENSTAEDT.

Lozano, E. F.: The Bloodless Treatment of Painful or Essential Hæmaturic Nephritis (Tratamiento no cruento de las nefritis dolorosas o hematúricas esenciales). *Rev. españ. de cirug.*, 1919, i, 231.

Cases of the so-called essential hæmaturic nephritis are not distinct anatomopathologic entities, but, according to the majority of authors, are manifestations due to excessive intrarenal pressure which compresses the glomeruli and stretches the nerve fibers. Acting on this hypothesis, different surgeons have endeavored to diminish the excessive intrarenal pressure by a variety of methods ranging from simple exposure of the kidney by the lumbar route to renal decapsulation.

Lozano believes that the intrarenal pressure can be reduced without the least operative traumatism by injecting a very concentrated solution into the kidney by means of ureteral catheterization and placing the patient in the Trendelenburg position. He has carried this method out experimentally in rabbits and is satisfied that it can be applied clinically.

In his experiments after chloroforming the animal Lozano performed a laparotomy exposing the kidneys and brought about an intense passive congestion in the right kidney by compressing the renal vein. This caused an increase in the volume of the kidney and a great increase in the intrarenal tension. Under these conditions the kidney was submerged in a saturated solution of sulphate of soda. Immediately there followed a marked change in its size and appearance, a phenomenon which was due to osmosis between two fluids of different concentrations, i. e., the solution of sulphate of soda of greater concentration and the intrarenal secretion of lesser, which interchanged through the renal tissues.

The method is practicable clinically when the fluid reaches the kidney pelvis after ureteral catheterization, and is indicated in essential hæmaturia and other renal conditions of a hæmorrhagic nature.

In answer to a criticism that the nervous system as well as the vascular system is involved in essential hæmaturia the author points out that the relief of the congestion removes the causes of nerve tension and the symptomatic pains cease. Such hypertonic ureteral injections he believes are innocuous and may be repeated whenever there are painful or hæmaturic crises.

W. A. BRENNAN.

Perearnau, E.: Nephrectomy for Bilateral Renal Tuberculosis. Results After Three Years (Nefrectomía por tuberculosis renal bilateral. Resultado a los tres años). *Rev. españ. de cirurg.*, 1919, i, 233.

In bilateral renal tuberculosis nephrectomy is a last resort when all other methods, especially treatment with tuberculin fail, and when the sufficiency of the remaining kidney is assured.

The operation reported was the first of its kind published in the literature of Spain. The right kidney of the patient was removed after complete proof of the functional capacity of the left kidney was obtained. The third day after the operation there was a slight uræmia which was easily overcome. During the eighth month a slight cystitis developed. At the end of a year ureteral catheterization showed that the pyuria and the Koch bacilli were of renal origin. At the end of two years it was noted that the urine was less purulent, and that there was neither dysuria nor polyuria. The patient was given frequent injections of tuberculin. Either this treatment or his constant open air life may explain the clearness of the urine, the negative kidney exploration, and the absence of any disturbance which were demonstrated at a recent examination.

W. A. BRENNAN.

BLADDER, URETHRA, AND PENIS

Marlier: Clinical Observations for the Study of Inguinal and Crural Cystoceles (Faits cliniques pour servir à l'étude des cystocèles inguinales et crurales). *J. de méd. et chir. prat.*, 1919, xc, 377.

The author calls attention to the cystoceles with or without sacs in the inguinal and crural regions which are often discovered during operations for hernia. Two of the three cases of which he gives the histories were cases of extraperitoneal cystoceles without sacs, i.e., a variety of bladder hernia which was discovered while he was searching for a hernial sac. Believing the cystocele to be the hernial sac,

he opened it. Such an error is especially apt to be made in the crural region as hernial sacs here are frequently thick and fatty.

In the first of the two cases reported the symptoms were such as to suggest the diagnosis of strangulated omental hernia. The true nature of the cystocele was discovered only when a jet of urine escaped through the incised wall. In the second case the cystocele was believed to be a small crural hernia involving the intestines and was discovered in the course of a radical operation for an old inguinal hernia.

A second variety of cystocele, i.e., with an incomplete sac or a paraperitoneal cystocele, is sometimes found in the inguinal region especially in old persons with prostatitis or stricture and in women with abdominal tumors. The author's third case was a crural cystocele of this type.

A third variety—the intraperitoneal cystocele—is very rare, always situated in the inguinal region, and of voluminous size. The herniated bladder is contained in an ordinary hernial sac together with an intestinal loop or portion of omentum which resembles a second sac contained within the first. A typical case of this kind may show a large cystic pocket in the hernial sac and in the rest of the sac the herniated intestine. The cystic pocket will be found to be a continuation of the bladder. There are no typical symptoms upon which the diagnosis of such a cystocele may be based. The herniated bladder is usually connected with the main organ by a narrow, stretched pedicle, and fluids injected into the bladder will not always reach the diverticulum.

Alessandri in reporting the statistics of 175 cases stated that the diagnosis was made before operation in only 5, in the course of operation without injury to the bladder wall in 71, during operation with injury to the bladder in 76, and not made even during operation in 23. The symptoms arising from a cystocele resemble those of an ordinary strangulated hernia but are less marked and are limited to abdominal pain, vomiting, tension, and irreducibility of the tumor.

If during operation the appearance of a hernia suggests anything unusual, it is well to make a small exploratory puncture of the contents with a Pravez syringe. W. A. BRENNAN.

Rezende, C. de: The Treatment of Vascular Urethral Caruncula by Chromic Acid (Tratamento da caruncula vascular da urethra pelo acido chromíco). *Brazil med.*, 1919, xxxiii, 84.

Since 1915 de Rezende has seen five cases of urethral vascular caruncula. The first case was that of a woman aged 65 years. In one case the patient, a woman, had been reduced almost to a skeleton and had borne the excruciating pain in the urinary canal for twelve years rather than submit to examination and operation. In this case therefore, owing to the objection to operation, the author treated the papilloma with chromic acid; after the induction of local anæsthesia of the urethral canal, he destroyed the tumor by puncturing it repeatedly with a probe dipped in the chromic acid. When the growth had disappeared he cauterized the site in the same way, neutralizing any excess acid with sodium bicarbonate. There was no hæmorrhage and the whole procedure was effected without appreciable pain. The woman's condition has been good during the two years which have passed since the operation was performed.

In another case in which the author destroyed the caruncula with the actual cautery pain was felt for several days and was due evidently to the action of the heat on the surrounding tissues.

The author cannot find any report in the literature of the use of chromic acid for the treatment of this affection, but the literature available to him is very limited. Possibly it is not new. W. A. BRENNAN.

Stern, M.: Four Cases of Urethral Stricture with Acute Retention of Urine Treated Successfully Without External Urethrotomy. *Internat. J. Surg.*, 1919, xxxii, 180.

The first case was that of a man who was in a very poor general condition with almost complete retention of urine and an extremely distended bladder. Cystotomy with the insertion of a drainage tube was done, the anæsthetic used being gas-oxygen. After several days' rest in bed, during which time the suprapubic drainage was continued and warm urethral irrigations and instillations of argyrol solutions were made into the urethral orifice, the patient was able to void freely. At the expiration of ten days the instillation tube entered the stricture without difficulty and wider dilatation was effected without interruption.

The second case was that of a man 54 years of age with a twenty-year history of stricture. His temperature was septic and there was urinary extravasation. Free incision of the infiltrated area and suprapubic drainage were performed with results about the same as those in the first case.

The third patient, who had never experienced acute retention before, was found to be in a very serious condition on admission to the hospital. The urethra was badly traumatized and there was complete retention. Cystotomy was performed and in two weeks the suprapubic wound was allowed to close.

In the fourth case there was a history of previous external urethrotomy. The passing of sounds was neglected and the gradual decrease in the urinary stream culminated after six months in complete closure. In this case a modification of Russel's operation was done.

In his conclusions the writer states that in the first three cases palliative treatment of the area of stricture gave results far superior to those which could have been expected from external urethrotomy both as to mortality and surgical outcome. In the fourth case the ultimate result of external urethrotomy was demonstrated to be inferior to that of palliative treatment when carefully carried out.

The advisability of palliative or local surgical treatment is to be decided upon after the urine has

become clear and the symptoms of irritation at the vesical neck and external sphincter have been eliminated, and in this we must be guided by the occupation, habits, and social status of the patient and the effect of instrumentation upon the stricture area. When the infiltration is deep and unyielding as in the cicatricial variety, the indications are for local surgery rather than palliative treatment.

In cases amenable to palliative treatment the results are excellent. The dilating irrigator causes the absorption of strictures through the agency of long irrigations of warm water accompanied by dilatation.

In the operative treatment Russel's partial resection, Marion's radical resection, and Cabot's plastic operation have advantages in their respective fields. In order to determine which would be best in a given case the membranous urethra and the bulbous and prostatic portions for about one half inch in front and behind it must be freed and examined. LOUIS GROSS.

GENITAL ORGANS

Pirondini, E.: The Functional Classification of Cases of Prostatitis and Freyer's Operation (Suddivisione funzionale dei prostatici e operazione di Freyer). *Policlin.*, Roma, 1919, xxvii, sez. chir., 113.

On the basis of the renal function, cases of prostatitis may be classified into three groups, or better, according to three stages. While such a division is not quite in accordance with the classical subdivisions, it is to be preferred for therapeutic purposes.

In cases of prostatitis of the first functional stage the urine is clear. Such patients should be operated upon in one stage unless there are definite changes in the viscera. Those who have severe secondary infection should be operated upon in two stages separated by a short interval of time.

Cases of prostatitis of the second functional stage are those in which the anatomical and functional alterations, though advanced, are at least in part mechanical and still reparable.

Prostatitis of the third functional stage is that in which there is prolonged chronic retention and in which the dominating renal changes are old, atropic, and sclerous in character. In such cases the injury to function is irreparable or at the best only very slightly reparable.

In some cases of prostatitis of the second stage it may be possible to operate in one stage, but as a general rule these cases, and always those of prostatitis of the third degree, should be operated upon in two stages following prolonged preparatory periods consisting of a preliminary period in which a permanent catheter is used and an interval period of suprapubic drainage. As a rule the second period may be shorter than the first.

In cases of prostatitis of the third stage the preparatory course is often less efficacious than was expected. At times the improvement of the general state is much greater and more regular than that of the renal function. In these cases great success has been obtained with the Freyer operation done in two stages. Patients operated upon in this way may live a long time without showing any phenomena of renal insufficiency. It is very probable, however, that this is simply a clinical latency rather than true functional equilibrium. W. A. BRENNAN.

Geiringer, D., and Campuzano, J.: An Interesting Case of Prostatic Obstruction (Un caso interesante de obstruccion prostatico). *Rev. de med. y cirug. de la Habana*, 1919, xxlv, 136.

The author states that anterior obstructions of the prostate, i.e., obstructions in the urethral rather than the vesical part of the internal sphincter, are difficult to diagnose. These constitute the class of cases in which the obstruction is due to hypertrophy of Albarran's glands.

The author reports a case which was that of a man 64 years of age. The urethroscopic examination showed an oval elevation of the floor of the posterior urethra extending from the verumontanum to the neck of the bladder. There was no lateral compression of the urethra. A suprapubic operation was done and the adenoma removed.

W. A. BRENNAN.

Watson, E. M.: The Status of the Vesical Sphincter after Prostatectomy. *Surg., Gynec. & Obst.*, 1919, xxviii, 569.

The two chief factors which should be considered in explaining unsatisfactory function after prostatectomy are (1) the incomplete removal of the obstruction, and (2) too extensive trauma to adjacent parts incident to removal of the hypertrophied lobes.

The part played by the internal or vesical sphincter and the external or urethral sphincter has long been a subject of much diversity of opinion. At the present time it is generally believed that the internal sphincter marks the normal closing point of the bladder.

Hyman has recently given a very conclusive study of the resulting changes at the bladder outlet following suprapubic prostatectomy by means of collargol cystograms. In a series of 38 cases he found that 28 showed two distinct cavities after operation—the bladder cavity, and, continuous with it, the cavity from which the prostatic adenoma was removed. In these cases the external sphincter marked the closing point of the bladder. Of the remaining 10 cases a few showed a very slight funnel formation and the rest no change from the normal. Hyman states that the internal sphincter was destroyed by operation or its formation so impaired that it could not have had any effect in retaining the fluid in the bladder.

From Hyman's study it is readily seen that though the internal or vesical sphincter is destroyed in the majority of cases of suprapubic prostatectomy, no

incontinence follows. Yet under normal conditions this same vesical sphincter is the muscle which holds the urine in the bladder. Occasionally, however, we meet with a person who has continued incontinence following this operation. The only explanation is that in removing the hypertrophied lobes an unwarranted amount of trauma was done to the posterior urethra, i. e., its involuntary musculature, in addition to permanent injury of the internal sphincter. The action of the external sphincter, a purely voluntary muscle and directly under the control of the will, can hardly be accredited with the power of remaining tonically contracted for a period long enough to give normal urinary continence.

By reason of the approach through incisions in the posterior lobe and oftentimes the successful enucleation without rupture of the bladder mucosa the method of removing the prostate through the perineum seemed to offer possibilities for observation of the vesical outlet under conditions quite different than those following suprapubic prostatectomy. For the purpose of this study 25 cases were obtained from the clinic of the James Buchanan Brady Urological Institute. The recent cases were those of convalescents in the hospital and the older cases were those of patients living near by. The operation performed in every instance was Young's conservative perineal prostatectomy done by Young or one of his staff.

In every instance the beginning of interval urination, which from a functional standpoint indicates the return of control in the internal vesical sphincter, was noted. The study of the vesical orifice was made in these cases by means of cystograms taken some time subsequent to operation, i. e., from three weeks to thirteen years afterward. These were made after filling the bladder with 10 per cent thorium solution through a catheter as recommended by Burns. The bladder outlines and particularly the region of the prostatic orifice were studied for evidence of dilatation as shown by the escape of the thorium solution into the posterior urethra.

The author summarizes his paper as follows:

From a study of the cases herewith reported it is seen that following perineal prostatectomy the internal or vesical sphincter returns to its normal tone and function in every instance.

This takes place within a few weeks as demonstrated by the accompanying cystograms. From clinical observations there may be an even earlier return of function, judging from the establishment of definite intervals of urination a few days after prostatectomy has been performed with a perineal urethrotomy in the membranous urethra back of the interval sphincter as it should be. Not infrequently urine is voided at three- and four-hour intervals at this period through both the urethra and the urethrotomy wound, while during the intervening time the patient is perfectly dry. These rather long periods of complete continence could not occur under the conditions described if the vesical sphincter were not functioning normally. THEODORE DROZDOWITZ.

Herbst, R. H.: Cancer of the Prostate; a Combined Surgical and Radium Method of Treatment. *J. Am. M. Ass.*, 1919, lxxii, 1610.

By the use of radium embedded in the carcinomatous prostate at six different points the author has obtained excellent clinical results. His technique consists of exposing the prostate suprapubically and placing the radium into the prostatic mass through the bladder. Six weeks to two months later the prostate is exposed perineally and the radium again placed in the gland in a similar manner. In the one case reported in the article the result was all that could be desired.

V. D. LESPINASSE.

MISCELLANEOUS

Stein, A.: A Case of Atypical Male Sex Ensemble. *Med. Rec.*, 1919, xcv, 902.

The author reports the case of a pseudo-hermaphrodite of male type, 31 years of age, who wished to lead the life of a woman. It was not considered advisable, however, to undertake any operation either to form a vagina or fix the undescended testicle on the left side.

Although the general appearance was that of a normal, well-built woman, local examination showed the presence of a rudimentary penis, hypospadias, an undescended testicle on the left side, a descended testicle on the right side, the absence of internal female genitals, as was shown also in a previous laparotomy, and absence of the prostate gland.

The psychic female sex attitude of this subject was probably essentially the outcome of early environment and rearing as a girl. The author points out that although from one view point sex is decided by the anatomical character of the gonad or sex gland, the development of the psycho-sexual center is given an extremely wide scope through education, example, and suggestion.

SURGERY OF THE EYE AND EAR

EYE

Lawson, A.: Flavine in Ophthalmic Surgery. *Lancet*, 1919, cxcvi, 1112.

At the present time flavine is sold on the market as acriflavine, and also as proflavine. Acriflavine is the methylchloride of the organic compound di-amino-acridine, whereas proflavine is the hydrochloride or sulphate of the same base and a preliminary product in the manufacture of acriflavine. Both are yellow dyes which are extremely potent antiseptics, but their bactericidal action unlike that of other powerful antiseptics in common use—such as the phenols, mercuric chloride, and eusol—is enhanced rather than diminished by admixture with serum. Further, they are comparatively non-toxic, both locally as regards the tissues at the site of application and generally as regards the body as a whole after absorption. Proflavine appears to be the preferable compound when dealing with the conjunctiva. For general purposes in eye-work a solution of proflavine of a strength of 1:1,000 in normal saline was adopted by the author.

Lawson emphasizes the absolutely non-irritating effects of proflavine when applied to any wound surface, clean or otherwise, solutions of a strength of 1:1,000 being absolutely painless to even the most acutely tender eye.

The use of flavine is not to be insisted upon as a necessary routine for every operation, though the author has employed it routinely during the last twelve months. There are four classes of wounds in which he has found it to be of the highest value:

1. Wounds caused by foreign bodies. In the two years during which flavine has been employed he has not had a single case among the many wounds he has treated in which there was any trouble due to sepsis.

2. In all operations requiring the use of sutures. If during the wound healing the effects of flavine are required for a week or so, a stronger solution than 1:4,000 is not to be recommended.

3. When operative measures are necessary in some cases of perforation of the cornea with extrusion of the iris, and in a certain number of cases of acute congestive glaucoma. In such conditions a solution of 1:1,000 is to be preferred to a weaker solution.

4. Wounds in which grafts have been used. In such cases flavine is invaluable as a dressing. Strips of gauze well soaked in it should be laid over the graft when applied. This dressing need not be touched for several days.

In inflammatory conditions of the eye, the inflammation will be checked and its progress limited by flavine though if of any severity it will not be cured. Flavine is not to be relied upon to cure conjunctivitis. If it is used at all it must be as an adjunct to other measures. Possibly because flavine has little power to penetrate the epithelial surface, it has only a very limited use in ophthalmia neonatorum and other kindred acute conjunctival disorders. The author believes it would prove to be of great value in preventing the onset of gonorrhœal ophthalmia and a far better and safer preventive measure than the use of silver nitrate in the eyes of new-born babies.

D. C. Balfour.

Brewerton, E. W.: Case of Angioma of the Retina. *Proc. Roy. Soc. Med.*, Lond., 1919, xii, Sect. Ophth., 20.

Brewerton reports a case of cavernous angioma situated in the inferior nasal quadrant of the left retina. The patient's vision was 6/9 partly, and the only symptom floating spots which had been noticed since 1913.

The angioma was an oval, slightly swollen, pale pink mass about twice the size of the disk and bordered above by a dark red rim. The inferior nasal artery was much distended, tortuous, and varicose, but its branches were normal; toward the periphery it became larger and was lost on the lower nasal side of the angioma. From the nasal side of the mass a much distended vein passed upward in a tortuous route and suddenly became contracted just before it opened into the inferior temporal vein. Below the contraction there was white exudate on the nasal side. The common venous trunk remained normal for a short distance and then suddenly dilated and remained distended for the rest of its course.

The author believes that the vein was distended by mechanical factors and was not diseased; that there was a congenital fault in the capillaries of part of the retina which caused them to dilate into cavernous spaces. Indicating the absence of disease, he says, is the fact that its branches were normal in size and general appearance. In such cases there is danger of recurrent retinal hæmorrhage from the vein, with gradual permanent loss of vision.

W. F. Moncreiff.

Hallett, D.: Cataract Extraction by the Intracapsular Method: Advantages and Technique. *Hahneman. Month.*, 1919, liv, 321.

The removal of the cataract in its capsule by the technique of Major Henry Smith as modified by the use of the Fisher lid hooks and in some other minor details has several advantages. By abandoning all mechanical spring specula in favor of the separate lid retractors held by the assistant the escape of vitreous fluid is reduced to a minimum. Retention within the eye of portions of the capsule and cortical substance, the most common cause of postoperative inflamma-

tion, is obviated by extraction in the intact capsule. There is no opaque substance remaining in the pupillary area. Many additional months or years of good vision may be given the patient by extracting the immature cataract as soon as it interferes with useful vision. The author believes that in this method there are no dangers greater than those in other methods.

A preliminary iridectomy, ten days previous to the lens delivery, facilitates the latter procedure from a technical standpoint and has the further advantage of demonstrating to the patient that an operation upon the eye can be painless. It thus promotes a more tranquil frame of mind and body and better co-operation on the part of the patient for the extraction of the cataract.

Complete details of the preparation of the patient, the instruments, the technique of the operative procedure, and the after-treatment are given. The author's method does not vary in any important respect from the modification of Smith's technique as described by Vail, Fisher, and others.

A series of 48 consecutive intracapsular extractions made by the author is tabulated and summarized. The capsule was intact in 44 cases. Of the 4 cases in which a part or all of the capsule remained within the eye, there was a subsequent iridocyclitis in 2, and in 2 a prior chronic glaucoma. In only 5 cases was there a loss of vitreous, 4 following and one preceding delivery of the lens. In each of these cases the final vision was 20/30 or better. Glaucoma was a prior complication in 6 cases, in 2 of which a final vision of 20/30 or better was secured. In 4 cases there was a postoperative iridocyclitis and in one of these the eye was lost. There were 22 immature, 23 mature, 2 nuclear, and 1 hypermature cataracts. A preliminary iridectomy was performed in all but 1 case. The iris was caught up by one pillar in 8 cases, and by both pillars in 2 cases; none required any further surgery. Of the entire series of 48 cases the vision obtained was 20/40 or better in 79 per cent, 20/30 or better in 70 per cent, 20/25 or better in 56 per cent, and 20/20 or better in 48 per cent. Of 8 patients whose final vision was 20/70 or poorer, only 2 had a possibility of good vision owing to prior complications. The visual results in the remaining 40 cases averaged 20/25.

W. F. Moncreiff.

Tooke, F. T.: Tuberculous Iridokeratitis—Some Features in Its Pathology. *Am. J. Ophth.*, 1919, ii, 395.

The author reports four cases of tuberculous iridokeratitis, with the clinical features, complete detailed descriptions of the histopathology, and excellent cuts. The pathologic material consisted of three enucleated eyes and one clot of organized exudate removed from the anterior chamber in a case which progressed to recovery.

Parsons' classification of tuberculous lesions of the iris is quoted: (1) miliary tubercle, (2) confluent or conglomerate tubercle, (3) tuberculous iritis. Tooke's four cases are examples of the latter group, which is distinguished by chronicity as compared with the more acute lesions of Classes 1 and 2. In the type under discussion, which according to Parsons is the most rare form of the three, there is generally a diffuse infiltration and thickening of the iris. There may also be giant cells, but tubercle systems are not necessarily evident. The author has not always found the tuberculin reaction positive. In the series reported, tubercles were found at and near the root of the iris with marked frequency, contrary to the former opinion that this location is more typical for syphilitic nodules than for tubercles. In the syphilitic nodule the iris tissue itself is of normal thickness and the nodules fade away in the surrounding tissue. They consist of mononuclear cells embedded in a fine reticulum; giant cells may be present, but caseation is rare. Within the nodules are widely dilated capillaries. Tubercles, on the other hand, are avascular.

In four cases the author found good evidence in one, and very suggestive evidence in the other three, that the iris lesion was secondary to pre-existing tuberculous foci elsewhere in the body. These findings coincide with the views held by Leber, Fuchs, and de Wecker. Parinaud, Lawford, Bach, and others, however, are equally positive that the iris itself is the initial source of infection.

All of Tooke's patients were females, and seven out of eight cases reported by Stock were those of women past middle age.

The author gives a résumé of the work of Stock and Verhoeff on tuberculous iritis and quotes Stock's conclusions from his experimental work on rabbits in substance as follows:

The first manifestation is a general thickening of the iris tissue without any unusual thickening of the blood-vessels. Three or four days later small grayish masses appear in the iris tissue. Stock supports the author's contention that there is no such thing as a site of predilection for the tubercle of the iris. The nodules on healing leave a white spot. In some animals there was a generalized hyperæmia of the iris, with the formation of new vessels and the general appearance of granulation tissue. The infiltration may be so intense that solitary nodules cannot be detected. Later changes may appear in the surrounding tissues as parenchymatous keratitis. The nodules are more numerous on the posterior than on the anterior surface of the iris. Giant cells are to be found only when the process has been active for months, and tubercle bacilli only when there is central caseation of the individual tubercles.

In the more malignant form, when a parenchymatous keratitis ensued, the iris was generally studded with tubercles the center of which was generally necrotic. In two of the author's cases, especially, a distinct disturbance of the endothelial cells of the cornea was noted in the presence of a keratitis punctata. In the animals inoculated, as well as in the human cases recorded by Stock, Descemet's membrane always remained intact. In

one of the author's cases there was a fairly distinct atrophy or actual necrosis of this membrane.

In the author's experience an infiltration of the cornea is the rule rather than the exception. The ciliary body is not of necessity always acutely involved in the disease process. In gross involvement of the iris there may be large or small tubercles of the ciliary body. Stock was unable to find the pathologic manifestations in animals which might be expected from clinical observations in man.

Verhoeff states that in his experimental cases the size and number of the lesions were greater at the filtration angle than elsewhere, showing that more bacilli lodged in that area. In the author's cases and those of Stock also there was a prevalence of tubercles of the iris close to the filtration angle. The author notes further that in his cases the corneal lesion has been more often central than peripheral, a fact which he considers due largely to the more stagnant supply of lymph in the central area and perhaps secondarily to interference with nutrition from the aqueous by deposits in the pupillary area.

The author has shown that the extension of these lesions is through the blood-stream, thus accounting for the presence in tuberculous iridokeratitis of tubercles free in the vitreous, about the ciliary processes, in the choroid, and even in the more anterior portion of the retina. He regards the necrosis of Descemet's membrane in one of his cases as due not to direct apposition of the tubercle upon its endothelial lining, but to a deep interstitial keratitis with subsequent necrosis and doubtless with the presence of actual bacilli rather than toxins.

W. F. MONCREIFF.

EAR

Hill, F. T.: A Study of the Aural Complications of the Recent Influenza Epidemic with Special Reference to the Clinical Picture. *Laryngoscope*, 1919, xxix, 351.

In the author's experience during the recent influenza epidemic otitis media was an infrequent complication of influenza and occurred more often in cases developing pneumonia. This type of otitis media first shows a hyperæmia and then an acute hyperplasia or hyperplastic œdema of the mucous membrane of the middle ear. The picture is definite and characteristic, including a drooping of the canal wall which is not indicative of a suppurative mastoiditis.

The operative indications of suppurative mastoiditis are increased purulent discharge and thickened mastoid periosteum. Mastoid tenderness and œdema, if present, are added arguments for surgical treatment.

S. S. HOWE.

Lake, R.: A New Method of Incision of the Tympanic Membrane for Acute Otitis. *Lancet*, 1919, cxcvi, 977.

The author advocates a curved incision with the convexity upward and following the contour of the edge of the ear-drum. He states that he has used this method for several years and that it has given him better results than any other, providing a general anæsthetic is employed and the case is seen before involvement of the antrum or mastoid cells. In his opinion it allows a longer drainage. For the after-treatment which he states is of considerable importance he recommends a combination of equal parts of hydrogen peroxide and chlorinated soda solution mixed immediately before use and syringed into the external meatus while it is effervescing.

D. C. BALFOUR.

Alexander, C. J.: A Case of Probable Metastatic Carcinoma of the Middle Ear. *J. Am. Inst. Homœop.*, 1919, xi, 1404.

The patient had had her right breast removed three years previously because of carcinoma. According to the subsequent history, throat and laryngeal symptoms, cough, a choking sensation, aphonia, and difficulty in swallowing were the first to manifest themselves afterward and therefore the condition in the middle ear must have been an extension from the throat.

A growth was found in the right side of the pharynx and there was complete immobility of the right vocal cord. The right drum was immovable by compression and aspiration, excepting a small area in the anterior and posterior superior quadrants. The lower half of the drum membrane was of a bluish-red color as if blood were behind but not against it. In the posterior superior quadrant were three small vertical folds and there was fixation of the malleus. Pronounced well-formed blood-vessels were seen extending from the roof of the external canal down over the drum membrane in front of and behind the short process of the malleus. Many were observed also extending outward from the drum membrane in all directions, but especially marked on the floor and posterior wall of the external canal. There were no clinical signs of labyrinthine involvement.

O. M. ROTT.

SURGERY OF THE NOSE, THROAT, AND MOUTH

NOSE

Hitschler, W. A.: The Technique of Nasal Douching. *Pennsylvania, M. J.*, 1919, xxii, 551.

After discussing the prevalence of the habit of nasal douching and drawing attention to its dangers, Hitschler states the physical principles underlying a safe and efficient technique:

1. There should be sufficient space for the outflow of the liquid.
2. This can be determined only by means of the head mirror and reflected light.
3. If necessary, the mucosa should be shrunken first.
4. The mouth should be kept open.
5. The capacity of any apparatus should not exceed 4 to 6 drams.
6. Douching should be followed by an oily spray.

Technique of anterior douching: In using a rubber bulb, the patient's head should be held forward and downward and the mouth should be open. If one fossa is appreciably narrower than the other, the fluid should be introduced into the narrower nostril only.

Technique of posterior douching: With the patient's head erect, the right angled tip is introduced behind the soft palate and the fluid gently injected into the nasopharynx. The head should then be bent forward and downward immediately so as to permit the solution to flow out of the nose.

The solution used should be slightly acid.

O. M. Rott.

Lewis, J. D.: Head Complications of Influenza. *J.-Lancet*, 1919, xxxix, 287.

During the influenza epidemic in Minneapolis many patients complained of symptoms resembling those due to sinus involvement but caused by mechanical interference with drainage from the sinuses. True empyema of the nasal accessory sinuses was the exception.

In 53 necropsies at Fort Riley, Kansas, sphenoiditis was found in 28, ethmoiditis in 13, and frontal sinusitis in 2. The predominating organism was the hæmolytic streptococcus. The writer therefore concludes that sinus involvement is more frequent in some localities than in others. E. J. Patterson

THROAT

New, G. B.: Amyloid Tumors of the Upper Air Passages. *Laryngoscope*, 1919, xxix, 327.

Amyloid tumors of the upper air passages are rare and occur as part of a general amyloidosis or as a local condition. The writer reports four cases of involvement of the larynx in which the tumor tissues had the appearance of yellowish waxy growths and the diagnoses were made by examination of excised portions.

In one case thyrotomy was necessary to relieve dyspnœa, and in another portions of the tumor were removed by the indirect method.

The X-ray, radium, and fulguration were used successfully in the treatment of these cases.

S. S. Howe.

MOUTH

Talbot, E. S.: Bone Absorption around the Roots of Teeth. *Dental Cosmos*, 1919, lxi, 361.

As a result of his research on bone absorption around the roots of teeth, the author reports that dental X-ray pictures do not show the pathology necessary for guidance in the treatment of interstitial gingivitis, pyorrhœa alveolaris, or apical alveolar changes. He finds that there are a number of stages in the pathologic evolution from the normal healthy tissues to a fully formed abscess which the X-ray does not and cannot, by the present method, show.

To treat diseased teeth and the alveolar tissues successfully, we must be able in some way to distinguish the finer changes which occur in the evolution of a fully developed abscess. Each stage requires different treatment, and a knowledge of each is necessary to decide whether a tooth can be saved or should be removed.

The removal of pulpless teeth is recommended when all other sources of infection have been excluded. By extracting such teeth, which did not show defects in the X-ray picture, the author has been able to arrest arthritis deformans and cure headaches, indigestion, boils, skin eruptions, and enlarged glands of the neck. M. N. Federspiel.

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